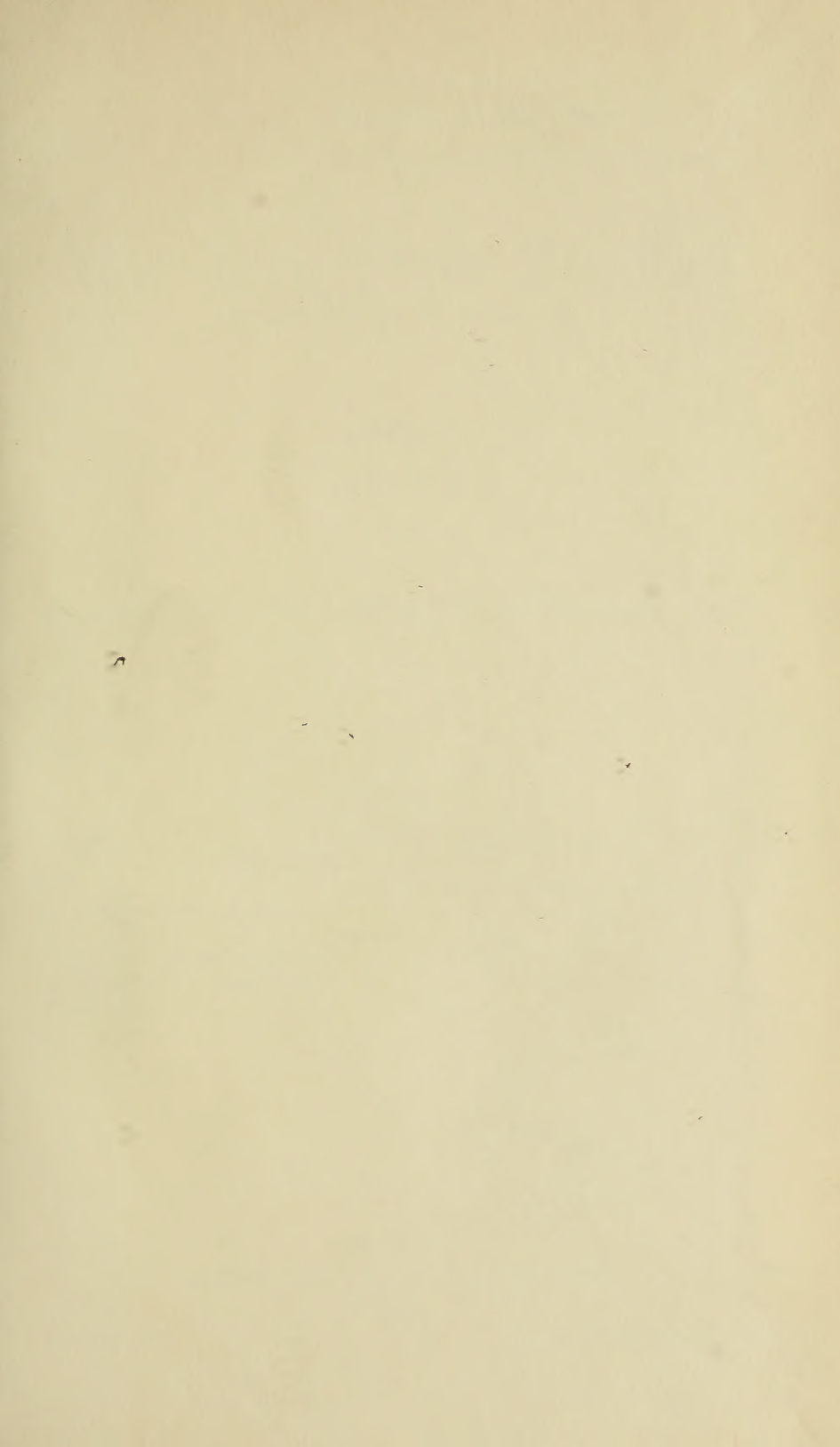


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New York State Museum

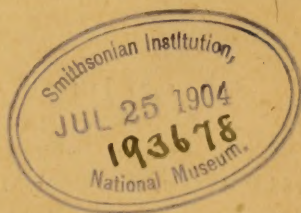
CHARLES H. PECK State Botanist

Bulletin 75

BOTANY 7

REPORT OF THE STATE BOTANIST 1903

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ALBANY

UNIVERSITY OF THE STATE OF NEW YORK

1904

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University of the State of New York

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New York State Museum

FREDERICK J. H. MERRILL Director

CHARLES H. PECK State Botanist

Bulletin 75

BOTANY 7

REPORT OF THE STATE BOTANIST 1903

To the Regents of the University of the State of New York

I have the honor of submitting to you the following report of work done in the botanical department of the State Museum during the past year.

Specimens of plants for the herbarium have been collected in the counties of Albany, Columbia, Essex, Hamilton, Oswego, Rensselaer, Saratoga, Schoharie, Warren and Washington. Specimens that were collected in the counties of Chautauqua, Chemung, Essex, Herkimer, Onondago, Ontario, Richmond, Saratoga, Schoharie, Seneca, Steuben, Suffolk, Wayne and Westchester have been received from correspondents.

Specimens collected and contributed represent 193 species. Of these, 46 are new to the herbarium and 13 are considered new or undescribed species. Of the 46 species, 35 are from the collections of the state botanist, 11 from those of correspondents. Of the 13 species, 12 belong to the collections of the botanist, one to those of his correspondents. A list of the names of the species added to the herbarium is marked **A**.

A list of the names of contributors and of the names of their respective contributions is marked **B**. The number of those who have contributed specimens is 41. Some of the specimens contributed belong to extralimital species. Some were sent merely for identification, but if for any reason their preservation seemed

desirable and their condition was satisfactory, they have been preserved and credited to the sender as a contribution. The number of those who have sent specimens for identification is 90, the number of identifications made is 623.

Names of species added to our flora, with notes concerning their habitats, localities and time of collection of the specimens, with descriptions of new species are contained in a part of the report marked C.

Remarks and observations on species previously reported, new stations of rare plants, unusual habits and descriptions of new varieties may be found in a part of the report marked D.

Specimens of many species of fleshy, corky and coriaceous fungi are specially subject to the attacks of destructive insects. In order to attain greater security against these attacks a series of such specimens representing about 500 species has been placed in small pasteboard boxes with close fitting covers. These boxes are in different sizes that they may be suitable for the reception of specimens of species of different sizes. The dimensions of the boxes vary in such a way that they present a certain degree of uniformity when arranged in proper order on the shelves of wall cases. They are 3x4, 4x6 or 6x8 inches in width and length and $1\frac{1}{4}$ or $2\frac{1}{2}$ inches deep. The alphabetic arrangement of the genera represented by their contents has been adopted to facilitate reference to them.

The investigation of our mushroom flora has been continued, but the crop of wild mushrooms has been unusually deficient and the additions to the herbarium correspondingly small. Still, a few species have been tested for their edible qualities and found to be worthy of addition to the list of New York edible species. Colored figures of these have been prepared and plain descriptions of them may be found in a part of the report marked E.

In my last report the general deficiency of the mushroom crop and the almost total absence of the common mushroom, *Agaricus campester*, were recorded and the peculiar character of the season was assigned as the probable cause. The season of 1903 has been similar to that of 1902 in its abundance

of rain and in its prevailing low temperature. It has also been similar, at least in the eastern part of the State, in its adverse influence on mushroom growth. In some respects its adverse character seems to have been intensified. Possibly the excessive drouth in the early part of the season may to some extent be responsible for this by preventing the development of the mycelium of some species. In 1895 and 1896 the abundance of the crop of the common mushroom and of the smooth mushroom was remarkable. They had then apparently reached their greatest abundance. In the few following years they appeared in moderate but diminishing quantity. In 1901 but few were seen in the vicinity of Albany. In 1902 they were still less in number and in 1903 I did not see a single specimen of the common mushroom in the whole region about Albany. This species at least seems to have reached its lowest point of productiveness. The probability is that there will now be a gradual return to greater crops of this mushroom. It is very evident that much moisture, specially if attended by prevailing low temperature, is not favorable to large crops of mushrooms. Probably the most favorable seasons will be found to be those of moderate rainfall and medium or rather high temperature, the rains being gentle and frequent.

Specimens of about 75 species and varieties of edible mushrooms have been placed in trays and arranged in table cases for permanent exhibition. Specimens of species of fungi injurious to wood have also been placed in table cases, and also species of parasitic fungi destructive to cultivated and useful plants. These and samples of wood and bark affected by mycelium of various wood-destroying fungi constitute an economic collection of fungi which should be instructive and of popular interest.

The study of the *Crataegus* flora of the eastern part of the State has been continued and considerable time devoted to it. Specimens have been collected in the counties of Albany, Saratoga, Warren, Essex, Washington, Rensselaer and Columbia. A few have also been collected in the counties of Hamilton and Schoharie, but only a single visit was made to each of these localities,

and therefore the specimens from them are too incomplete to be satisfactory. These places must be again visited earlier in the season in order to get flowering specimens. Those who have made a special study of these trees and shrubs and have recently published many new species have given specific value to such characters as require a very complete set of specimens to make the identification certain and satisfactory. There are also some characters that are not well shown by the dried specimens and in order to make these available notes must be taken of them at the time the specimens are collected. The number of species recently described is so great that it seems very probable that mere varieties and perhaps mere forms have been in some cases described as species. But error in this direction may have a tendency to stimulate closer observation on the part of others in their efforts to recognize the fine distinctions made and may in the end be productive of better results than error in the other direction would be. According to the present understanding of these plants the number of species of *Crataegus* added to our flora is 19. They are specially noticed in a part of the report marked F.

A supplementary list of plants of the Susquehanna valley is marked G. It is composed of the names and annotations of species detected since the previous list was written and of species accidentally omitted from that list. It includes about 30 species.

Respectfully submitted

CHARLES H. PECK

Albany, Dec. 2, 1903

A

PLANTS ADDED TO THE HERBARIUM

New to the herbarium

Asarum reflexum <i>Bick.</i>	Hebeloma socialis <i>Pk.</i>
Aster curvescens <i>Burgess</i>	Hypomyces boletinus <i>Pk.</i>
Crataegus ascendens <i>S.</i>	Hydnum balsameum <i>Pk.</i>
C. brainerdi <i>S.</i>	H. macrescens <i>Bunker</i>
C. conjuncta <i>S.</i>	Inocybe castanea <i>Pk.</i>
C. contigua <i>S.</i>	I. excoriata <i>Pk.</i>
C. delucida <i>S.</i>	I. fallax <i>Pk.</i>
C. dilatata <i>S.</i>	I. serotina <i>Pk.</i>
C. dissona <i>S.</i>	I. squamosodisca <i>Pk.</i>
C. egglestoni <i>S.</i>	Isaria brachiata (<i>Batsch</i>) <i>Schum.</i>
C. exclusa <i>S.</i>	Iva xanthiifolia (<i>Fres.</i>) <i>Nutt.</i>
C. flabellata (<i>Spach</i>) <i>Rydb.</i>	Lactarius subvelutinus <i>Pk.</i>
C. gravesii <i>S.</i>	Nardia obovata (<i>Nees</i>)
C. irrasa <i>S.</i>	Oxalis brittonae <i>Small</i>
C. intricata <i>Lange</i> ,	Perilla frutescens (<i>L.</i>) <i>Britton</i>
C. lobulata <i>S.</i>	Phacelia dubia (<i>L.</i>) <i>Small</i>
C. [^] praecoqua <i>S.</i>	Phaeopezia retiderma (<i>Cke.</i>) <i>Sacc.</i>
C. matura <i>S.</i>	Podosphaera leucotricha (<i>E. & E.</i>)
C. peckii <i>S.</i>	<i>Salm.</i>
C. succulenta <i>Lk.</i>	Sarcoscypha rhenana <i>Fckl.</i>
Daphne mezereum <i>L.</i>	Stereum burtianum <i>Pk.</i>
Entoloma griseum <i>Pk.</i>	Tricholoma subluteum <i>Pk.</i>
Geoglossum farlowi <i>Cke.</i>	Ulmaria rubra <i>Hill</i>
Haplosporella macluræ <i>E. & B.</i>	

Not new to the herbarium

Agaricus arvensis <i>Schaeff.</i>	Berberis vulgaris <i>L.</i>
Agrostemma githago <i>L.</i>	Bidens cernua <i>L.</i>
Agastache scrophulariaefolia (<i>Willd.</i>)	Boletus americanus <i>Pk.</i>
Agrostis perennans (<i>Walt.</i>) <i>Tuckerm.</i>	B. chry. albocarneus <i>Pk.</i>
Allium canadense <i>L.</i>	B. elbensis <i>Pk.</i>
A. vineale <i>L.</i>	B. luridus <i>Schaeff.</i>
Alsine graminea (<i>L.</i>) <i>Britton</i>	B. piperatus <i>Bull.</i>
Althaea rosea <i>Cav.</i>	B. rubinellus <i>Pk.</i>
Amelanchier botryapium (<i>L. f.</i>) <i>D C.</i>	Bromus tectorum <i>L.</i>
A. rotundifolia (<i>Mx.</i>) <i>Roem.</i>	Cantharellus cibarius <i>Fr.</i>
Antennaria parlinii <i>Fern.</i>	C. infundibuliformis (<i>Scop.</i>) <i>Fr.</i>
A. plantaginea <i>R. Br.</i>	C. tubaeformis <i>Fr.</i>
Arcyria punicea <i>Pers.</i>	Cardamine pennsylvanica <i>Muhl.</i>
Aster rosc. variifolius <i>Pk.</i>	Collybia acervata <i>Fr.</i>
A. undulatus <i>L.</i>	C. familia <i>Pk.</i>
	C. velutipes <i>Curt.</i>

- Claudopus nidulans* (Pers.) Pk.
Clavaria inaequalis Mull.
C. krombholzii Fr.
Conium maculatum L.
Coprinus micaceus Fr.
Cornus candidissima Marsh.
C. stolonifera Mx.
Cortinarius amarus Pk.
C. canescens Pk.
C. cinnabarinus Fr.
C. rigidus Fr.
C. uliginosus Berk.
Craterellus clavatus (Pers.) Fr.
Crataegus champlainensis S.
C. coccinea L.
C. crus-galli L.
C. holmesiana Ashe
C. macracantha Lodd.
C. modesta S.
C. oxyacantha L.
C. pringlei S.
C. pruinosa Wend.
C. punctata Jacq.
Dalibarda repens L.
Daucus carota L.
Echium vulgare L.
Entoloma grayanum Pk.
Euonymus obovatus Nutt.
Fomes fomentarius (L.) Fr.
F. igniarius (L.) Fr.
F. pinicola Fr.
Galera lateritia Fr.
Galium mollugo L.
G. tinctorium L.
Gentiana andrewsii Griseb.
Gratiola virginiana L.
Helopsis helianthoides (L.) B. S. P.
Helvella ambigua Karst.
Hirneola auricula-judae (L.) Berk.
Hydnum coralloides Scop.
H. grav. subzonatum Pk.
Hygrophorus capreolaris Kalchb.
H. pudorinus Fr.
Hypericum arcyrion L.
Hypholoma capnoides Fr.
H. subaquilum Bann.
Hypocrea fungicola Karst.
Lactarius affinis Pk.
L. deliciosus Fr.
L. glyciosmus Fr.
Lactarius subd. *oculatus* Pk.
L. vellereus Fr.
Lenzites sepiaria Fr.
Lepiota amianthina Scop.
Lychnis alba Mill.
Lycoperdon perlatum Pers.
Lycopodium clavatum L.
L. obscurum L.
Marasmius scorodonius Fr.
Matricaria matricarioides (Less.)
Porter
Meibomia bracteosa (Mx.) Kuntze
Melilotus officinalis (L.) Lam.
Moneses uniflora (L.) Gray
Mycena galericulata (Scop.) Fr.
Myosotis laxa Lehm.
Myrica gale L.
Osmunda regalis L.
Otidea onotica (Pers.) Fckl.
Pinus echinata Mill.
P. strobus L.
Pleurotus porrigens Pers.
Polyporus cuticularis (Bull.) Fr.
P. picipes Fr.
Polystictus abietinus Fr.
P. hirsutus Fr.
P. perennis (L.) Fr.
Protomyces erythronii Pk.
Puccinia suaveolens (Pers.) Rostr.
Ribes floridum L'Her.
R. rubrum L.
Rubus canadensis L.
R. nigrobaccus Bail.
R. occid. pallidus Bail.
Russula furcata (Pers.) Fr.
R. dens. paxilloides Pk.
R. flaviceps Pk.
R. fragilis (Pers.) Fr.
R. purpurina Q. & S.
Salix discolor Muhl.
S. fragilis L.
Sanicula gregaria Bick.
Scirpus atrocinctus Fern.
S. atrovirens Muhl.
S. pedicellatus Fern.
Septoria rhoina B. & C.
Sisymbrium altissimum L.
Solidago canadensis L.
Spiraea salicifolia L.
Stropharia depilata (Pers.) Fr.

Symphytum officinale L.
Taraxacum taraxacum (L.) Karst.
Thelephora palmata (Scop.) Fr.
Thymus serpyllum L.
Tragopogon pratensis L.
Tricholoma sejunctum Sow.
T. subacutum Pk.
T. vaccinum (Pers.) Fr.
Ustilago zeae (Beckm.) Ung.

Uvularia sessilifolia L.
Valerianella radiata (L.) Dufour
Verbena angustifolia Mx.
Viola blanda Willd.
V. cucullata Ait.
V. labradorica Schrank
V. rotundifolia Mx.
V. selkirkii Pursh

B

CONTRIBUTORS AND THEIR CONTRIBUTIONS

Mrs E. G. Britton, New York

Anomodon attenuatus Hueben.
A. apiculatus B. & S.
Bryum nutans Schreb.
Buxbaumia aphylla L.
Cephalozia curvifolia Dumort.
Collema plicatile Ach.
Cylindrothecium seductrix Sull.
Dicranum flagellare Hedw.
D. viride Schp.
Grimmia apocarpa Hedw.
Hypnum brevirostre Ehrh.
H. chrysophyllum Brid.
H. imponens Hedw.
H. lindbergii Limpt.
H. novae-angliae S. & L.
H. proliferum L.
H. schreberi Willd.

Hypnum triquetrum L.
Homalia gracilis James
Leptotrichum pallidum Hampe
Leucodon brachypus Brid.
Mnium aff. ciliare C. & M.
M. cuspidatum Hedw.
M. medium B. & S.
Philonotis fontana Brid.
Platygyrium repens B. & S.
Polytrichum juniperinum Willd.
Porella platyphylla Lindb.
Pylaisaea polyantha B. & S.
P. velutina B. & S.
Sphagnum cymbifolium Ehrh.
Trichostomum brev. holtii Dixon
Ulota crispa Brid.
Weisia viridula Brid.

Mrs H. C. Davis, Falmouth Me.

Thalesia uniflora (L.) Britton | *Lysimachia vulgaris* L.

Mrs M. S. De Coster, Little Falls

Daphne mezereum L.

Mrs P. H. Dudley, New York

Carex stricta Lam. (Culms and leaves)

Mrs L. L. Goodrich, Syracuse

Phacelia dubia (L.) Small

Miss M. Hope, Seattle Wash.

Pseudotsuga mucronata Carr. (Piece of bark)

Mrs M. A. Knickerbocker, San Francisco Cal.

Arbutus menziesii Pursh

Quercus dumosa Nutt.

Tumion californicum Greene

Umbellularia californica Nutt.

Rhamnus californica Eschs.

Miss J. A. Moses, Jamestown

Viola rotundifolia Mx.

Miss E. S. Thomas, Schoharie
Craterellus clavatus (*Pers.*) *Fr.*

J. C. Arthur, Lafayette Ind.

Phragmidium speciosum <i>Fr.</i>	Uromyces acuminatus <i>Arth.</i>
Puccinia amphigena <i>Diet.</i>	Puccinia eleocharidis <i>Arth.</i>
Ravenelia portoricensis <i>Arth.</i>	

H. J. Banker, California Pa.

Craterellus dubius *Pk.*

W. C. Barbour, Sayre Pa.

Corticium salicinum <i>Fr.</i>	Irpex paradoxus (<i>Schrad.</i>) <i>Fr.</i>
Dasyscypha virginea (<i>Batsch</i>) <i>Fckl.</i>	Isaria brachiata (<i>Batsch</i>) <i>Schum.</i>
Fuligo violacea <i>Pers.</i>	Xylaria grandis <i>Pk.</i>

F. J. Braendle, Washington D.C.

Amanitopsis vaginata (<i>Bull.</i>) <i>Roze</i>	Flammula spumosa <i>Fr.</i>
Clitocybe virens (<i>Scop.</i>) <i>Fr.</i>	Lachnea hemisphaerica (<i>Wigg.</i>) <i>Gill.</i>
Collybia strictipes <i>Pk.</i>	Pholiota lutea <i>Pk.</i>
C. tort. setipes <i>Pk.</i>	Thelephora vialis <i>Schw.</i>

E. Bartholomew, Rockport Kan.

Tylostoma mammosum (<i>Mich.</i>) <i>Fr.</i>	Pluteus longistriatus <i>Pk.</i>
T. poculatum <i>White</i>	

S. H. Burnham, Vaughns

Asarum reflexum <i>Bick.</i>	Paspalum muhlenbergii <i>Nash</i>
Aster curvescens <i>Burgess</i>	Perilla frutescens (<i>L.</i>) <i>Britton</i>
Oxalis brittonae <i>Small</i>	Xanthium commune <i>Britton</i>

G. D. Cornell, Cooper's Plains

Hydrangea arborescens <i>L.</i>	Lilium superbum <i>L.</i>
---------------------------------	---------------------------

J. Dearness, London Ont.

Diaporthe microstroma <i>E. & E.</i>	Hemitrichia vesparium (<i>Batsch</i>)
D. velata <i>Pers.</i>	Lycogala exiguum <i>Morg.</i>
Dichomera prunicola <i>E. & D.</i>	Trichia incarnata <i>Pers.</i>

W. G. Farlow, Cambridge Mass.

Nardia obovata *Nees*

F. E. Fenno, Nichols

Carex flava <i>L.</i>	Verbena angustifolia <i>Mx.</i>
Salix myrtilloides <i>L.</i>	Woodwardia virginica (<i>L.</i>) <i>Sm.</i>

A. O. Garratt, Salt Lake City Utah

Puccinia calochorti <i>Pk.</i>	Puccinia plumbaria <i>Pk.</i>
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C. Gramesly, Charleston Ill.

Agaricus abruptus *Pk.*

N. M. Glatfelter, St Louis Mo.

Flammula eccentrica <i>Pk.</i>	Pholiota autumnalis <i>Pk.</i>
Galeria capillaripes <i>Pk.</i>	Russula luteobasis <i>Pk.</i>
Hypholoma ornellum <i>Pk.</i>	R. pusilla <i>Pk.</i>
Lactarius subvelutinus <i>Pk.</i>	Tricholoma viscosum <i>Pk.</i>
Pholiota detersibilis <i>Pk.</i>	

L. W. Hahn, Silver Creek
Euonymus obovatus *Nutt.*

C. C. Hanmer, East Hartford Ct.
Geoglossum farlowi *Cke.*

W. Herriot, Galt Ont.

Bromus cil. laevigulmis *Scrib.* | Panicum lanuginosum *Ell.*

R. B. Hough, Lowville
Pinus echinata *Mill.*

F. G. Howland, Saratoga
Collybia velutipes *Curt.*

R. B. Mackintosh, Peabody Mass.

Clitocybe cerussata *Fr.* | Tricholoma grammopodium (*Bull.*)
Deconica bryophila *Pk.* | *Fr.*
Pleurotus petaloides (*Bull.*) *Fr.*

C. McIlvaine, Cambridge Md.

Hypomyces viridis (A. & S.) *Karst.* | Phytophthora phaseoli *Thax.*
Panaeolus epimyces *Pk.*

W. S. Moffatt, Chicago Ill.

Clitocybe piceina *Pk.* | Pholiota comosa *Fr.*

G. E. Morris, Waltham Mass.

Boletinus grisellus *Pk.* | Lentinus tigrinus *Fr.*
Boletus parasiticus *Bull.* | Otidea onotica (*Pers.*) *Fckl.*

R. S. Phiher, Danville Va.

Boletus morgani *Pk.* | Polyporus curtisii *Berk.*
B. caespitosus *Pk.*

E. B. Sterling, Trenton N. J.

Geaster minimus *Schw.* | Agaricus cothurnatus *Pk.*
G. pectinatus *Pers.* | A. rutilescens *Pk.*
G. giovanellae *Bres.* | A. solidipes *Pk.*
Catastoma subterraneum (*Pk.*) *Morg.* | A. sphaerosporus *Pk.*

R. H. Stevens, Detroit Mich.

Helvella stevensii *Pk.*

F. C. Stewart, Geneva

Haplosporella macluræ *E. & B.*

D. R. Sumstine, Kittanning Pa.

Dictydiaethalium plumbeum | Podospaera oxyacanthæ *DC.*
(*Schum.*) | Puccinia cryptotaeniae *Pk.*
Lentinus ursinus *Fr.* | Stropharia squam. aurantiaca *Cke.*
Merulius tremellosus *Schrad.* | Urnula craterium (*Schw.*) *Fr.*

W. E. Warner, Washington D. C.

Amanita radicata *Pk.* | Pluteus cervinus (*Schaeff.*) *Fr.*
A. musc. formosa (*G. & R.*) | Polyporus cuticularis *Fr.*

B. C. Williams, Newark

Inocybe serotina *Pk.*

J. R. Cushier, New York City

Panaeolus solidipes *Pk.*

A. Knechtel, Albany

Picea canadensis (*Mill.*) *B. S. P.* (Trunk section)

L. H. Watson, Chicago Ill.

Clitocybe piceina *Pk.*

C

SPECIES NOT BEFORE REPORTED

Asarum reflexum Bick.

Ravines. Williams Bridge, Westchester co. May. S. H. Burnham.

Aster curvescens Burgess.

Woodlawn cemetery, Westchester co. July. S. H. Burnham.

Crataegus ascendens Sarg.

Clayey soil in pastures and borders of woods. North Greenbush and Rensselaer. May, July and September.

Crataegus brainerdi Sarg.

Rocky places in pastures. Sandlake. May and September.

Crataegus conjuncta Sarg.

Clayey and sandy soil. North Greenbush and in various places north and northeast of Albany. May, September and October.

Crataegus contigua Sarg.

Shaly soil. Lansingburg. May and September.

Crataegus delucida Sarg.

Clayey hillsides north of Albany. May and September.

Crataegus dilatata Sarg.

Clayey soil, roadsides and pastures. Thompsons Lake, Albany co. and Gansevoort, Saratoga co. June, July and September.

Crataegus dissona Sarg.

Clayey soil. Near Albany, Rensselaer, Lansingburg, Copake and Thompsons Lake. May, July and September.

Crataegus egglesoni Sarg.

Rocky places. Crown Point. May, July and September.

Crataegus exclusa Sarg.

Clayey soil. Crown Point. May, July and September.

Crataegus flabellata (Spach) Rydb.

Rocky places near the lake shore. Crown Point. May and September. This is a beautiful species well marked by its deeply and sharply lobed shining leaves, its 20 stamens with pink anthers and its globose fruit.

Crataegus gravesii Sarg.

Clayey soil. Albany, North Greenbush and Westport. May, June, September and October.

Crataegus irrasa Sarg.

Clayey soil. North Greenbush. May, June and September.

Crataegus intricata Lange

Hillsides near Albany and north of Lansingburg. May, June and September.

Crataegus lobulata Sarg.

Clayey soil. Crown Point. May and September.

Crataegus macracantha Lodd.

Clayey and sandy soil. North Greenbush, Thompsons Lake, Fort Ann and North Elba. May, June and September. This was formerly reported as a variety of *Crataegus coccinea*, but is now considered a distinct species. The name indicates that it has long spines, but they are not always conspicuously long. Its stamens vary in number from 7 to 10 and its anthers are whitish or pale yellow.

Crataegus matura Sarg.

Rocky or bushy pastures. Gansevoort, Saratoga co. and Lake Pleasant, Hamilton co. June, August and September.

Crataegus peckii Sarg.

Shaly soil. North of Lansingburg. May and October.

Crataegus praecoqua Sarg.

Clayey soil. Crown Point. May and September. First discovered here by W. W. Eggleston.

Crataegus succulenta Link

Clayey soil. Albany, Albion, Rensselaer co. and Central Bridge, Schoharie co. May, July and September.

In view of the growing interest in the study of our species of *Crataegus* it has been thought best to give descriptions of such

of our species as are not described in any of our manuals. These descriptions and remarks on the genus will be found in another part of the report.

***Daphne mezereum* L.**

Gravesville, Herkimer co. Mrs M. S. DeCoster. The spurge laurel or mezereum is an introduced shrub. It is sometimes cultivated but escapes from cultivation and grows wild.

***Entoloma griseum* n. sp.**

Pileus fleshy, firm, broadly campanulate or convex, obtuse or slightly umbonate, glabrous, often irregular, hygrophanous, grayish brown when moist, paler when dry, flesh whitish, odor and taste farinaceous; lamellae adnexed, emarginate, with a decurrent tooth, about 2 lines broad, pale pink; stem equal or slightly tapering upward, silky fibrillose, pruinose or mealy at the top, stuffed or hollow, grayish white; spores angular, nearly as broad as long, .0003 of an inch long.

Pileus 1-3 inches broad; stem 1-2 inches long, 3-5 lines thick. Under spruce and balsam fir trees. Lake Pleasant. August.

It is closely related to *E. grayanum* from which it may be separated by its darker color, more narrow gills and different place of growth.

***Euonymus obovatus* Nutt.**

Woods. Silver creek, Chautauqua co. L. W. Hahn.

This decumbent or trailing shrub was reported by Dr Torrey to belong to our flora, but he considered it a mere variety of *Euonymus americanus*. It is now regarded as a distinct species differing from the strawberry bush in its smaller flowers, obtuse and more finely crenulate leaves, earlier time of flowering and decumbent or trailing mode of growth.

***Geoglossum farlowi* Cke.**

Fishers island, Suffolk co. September. C. C. Hanmer. This fungus is much like *G. hirsutum* in external appearance, but its spores have but three septa.

***Haplosporella macluræ* E. & B.**

Dead stems of wistaria. Geneva. April. F. C. Stewart.

Hebeloma socialis n. sp.

Pileus fleshy but thin, convex, becoming plane or nearly so, glabrous, slightly viscid when moist, dingy yellowish white, flesh concolorous, taste nauseous; lamellae thin, close, slightly rounded behind, adnexed, at first whitish, then yellowish, finally brownish ferruginous; stem short, fibrous, floccose fibrillose, hollow with a small cavity, white; spores brownish ferruginous, elliptic, .00025-.0003 of an inch long, .00016-.0002 broad.

Pileus 8-15 lines broad; stem 12-18 lines long, 1.5-3 lines thick. Closely gregarious or subcespitose. Among short grass in pastures and golf ground. Menands. October. Distinguished from our other white or whitish species by its peculiar habitat and mode of growth and by its small spores.

Hypomyces boletinus n. sp.

Perithecia minute, conic or subglobose, closely nestling in a pallid or whitish subiculum, pale red or orange; asci slender, linear, .004-.005 of an inch long, scarcely .0003 broad; spores subfusiform, continuous, acuminate or apiculate at one end, .0008-.001 of an inch long, .00025 broad.

On some unrecognized decaying boletus, associated with *Sepedonium chrysospermum*. It differs from *H. polyporinus*, to which it is most closely related, in its more highly colored perithecia and longer spores, and from *H. boleticola* in the color of the subiculum.

Hydnum balsameum n. sp.

Resupinate with a very thin whitish or pallid subiculum; aculei mere conic brown points closely scattered but not crowded, giving to the surface a brown color.

Decorticated wood of balsam fir. North Elba. September. It sometimes grows on the bark also.

Hydnum macrescens Banker in lit.

Resupinate, effused, the thin subiculum less than 1 mm thick, ochraceous, subfarinaceous, specially in the thinner portions and on the woody substratum, rimose, the margin indeterminate; mycelium white, arachnoid, spreading in places beyond the subic-

ulum; teeth scattered, minute, .1-.25 mm long, .05-.1 mm broad, obtuse, often forked, colored like the subiculum but paler or white at the subciliate tips. Growing chiefly on the hymenial surface of *Stereum frustulosum* but often spreading over the substratum of decayed wood. Mt McGregor, Saratoga co. July.

The growth is most vigorous on the surface of the *Stereum*, where the subiculum becomes thickest and the teeth most numerous. On the woody substratum the growth is poor, the subiculum is thin and often the mycelium spreads naked over the surface of the wood. This has suggested the specific name. The thinning out of the subiculum indicates that the fungus finds its proper nourishment in the tissues of the *Stereum* and it is doubtful if it will be found dissociated from that plant. It appears to be related to *H. sulphurellum* Pk. but differs from it in color, in the indeterminate margin and in the ciliate teeth.

***Inocybe castanea* n. sp.**

PLATE O, FIG. 1-8

Pileus conic or convex, umbonate, rimose fibrillose, the margin incurved, dark chestnut brown; lamellae thin, narrow, close, adnate, whitish or pallid when young, ferruginous brown when mature; stem equal, hollow, glabrous, slightly pruinose or mealy at the top; paler than the pileus; often whitened at the base by mycelioid tomentum; spores angular, nearly or quite as broad as long, .00025-.0003 of an inch long and broad; cystidia subfusiform, .002-.0024 of an inch long.

Pileus 5-8 lines broad; stem 10-18 lines long, about 1 line thick. Mossy ground under spruce and balsam fir trees. Lake Pleasant. August.

This species is very closely related to *I. umboninata* from which it may be separated by its smaller size, the chestnut tint of the cap, its hollow stem and smaller merely angular spores. Cystidia are more abundant. The species belongs to section *Rimosi*.

***Inocybe excoriata* n. sp.**

PLATE O, FIG. 14-19

Pileus fleshy, broadly conic, soon broadly convex, umbonate, fibrillose or fibrillose squamulose, somewhat silky or tomentose

on the margin, grayish brown or pale vandyke brown, the cuticular surface often cracking and separating in places but remaining on the disk and sometimes on the margin, flesh white; lamellae narrow, close, emarginate, adnexed, decurrent with a tooth, crenulate on the edge, white becoming brownish gray; stem equal, solid, silky fibrillose, white or whitish without and within; spores yellowish brown (raw umber), elliptic, even, .0003-.0004 of an inch long, .0002-.00024 broad; cystidia flask shape, .002-.0024 of an inch long.

Pileus 1-2 inches broad; stem 1-2 inches long, 2-3 lines thick. Among fallen leaves in woods. Lake Pleasant. August.

The surface of the pileus cracks longitudinally and therefore the species belongs to the section Rimosi. The peeling and disappearance of parts of the cuticle suggest the specific name. A slight whitish webby veil is present in the young plant.

Inocybe fallax n. sp.

PLATE O, FIG. 20-24

Pileus thin, campanulate or convex, umbonate, obscurely fibrillose, sometimes minutely and obscurely squamulose, whitish or buff white, somewhat shining, the margin decurved or incurved, often splitting; lamellae thin, close, rounded behind, slightly adnexed, pallid when young, becoming rusty brownish when old; stem long, equal, hollow, flexuous, minutely pruinose, mealy, whitish; spores angular, slightly nodulose, .0003-.0004 of an inch long, .00024-.0003 broad; cystidia .0016-.002 of an inch long, .0006-.0007 broad, oblong elliptic.

Pileus 1-2 inches broad; stem 2-3 inches long, 2-4 lines thick. Among fallen leaves in woods. Lake Pleasant. August.

This species might easily be taken for a large form of *I. geophylla*, but an examination of its spores shows it to be distinct. Its cystidia are short and broad.

Inocybe serotina n. sp.

Pileus fleshy, firm, varying from campanulate to nearly plane, fibrillose toward the margin, white, sometimes tinged with yellow or brownish yellow, flesh white; lamellae close, rounded behind, nearly free, subventricose in fully expanded specimens, whitish

becoming brownish cinnamon; stem nearly equal, bulbous or narrowed at the base, long or short, solid, fibrous, white; spores oblong, even, .0005-.0006 of an inch long, .00024-.0003 broad.

Pileus 1-2.5 inches broad; stem 1-2 inches long, 3-6 lines thick. Sandy shores of Sodus bay and Lake Ontario. October. E. B. Burbank. Communicated by B. C. Williams.

Related to *I. sambucina* from which it differs in the fibrillose margin of the cap, in the darker color of the mature lamellae, in the larger spores and in its habitat. From *Hebeloma colvini*, which also grows in sandy soil, it differs in its whitish color, longer spores and solid stem. Its mycelium binds together a mass of sand which forms a somewhat bulbous base to the stem. Mr Burbank says that it occurred in great abundance in October and that it is edible.

Inocybe squamosodisca n. sp.

PLATE O, FIG. 10-13

Pileus fleshy, firm, convex, dry, fibrillose on the margin, rimose squamose in the center, ochraceous buff, flesh whitish or yellowish white; lamellae rather broad, moderately close, adnate, pale ochraceous, becoming darker with age; stem short, firm, equal, solid, fibrillose, colored like the pileus; spores elliptic, even, .0003-.0004 of an inch long, .0002-.00024 broad.

Pileus 1-2 inches broad; stem about 1 inch long, 2-3 lines thick. Gregarious. Under pine trees. Shore of Sacandaga lake. August.

The scales of the pileus are flat and spotlike and are formed by the cracking of the cuticle.

Isaria brachiata (Batsch) Schum.

On decaying *Tremellodon gelatinosum*. Van Etten. October. W. C. Barbour.

Iva xanthiifolia (Fres.) Nutt.

Waste places in the northern part of Albany. August. Introduced from the west but growing freely here.

Lactarius subvelutinus n. sp.

Pileus fleshy, firm, convex or nearly plane, subumbilicate, dry, minutely velvety or pruinose velvety, sometimes rugose, golden tawny, flesh white, milk white, taste mild; lamellae narrow,

close, adnate or slightly decurrent, yellowish or cream color, becoming darker with age; stem short, equal, solid, colored like or a little paler than the pileus; spores white, globose, nearly smooth, .0003 of an inch broad.

Pileus 1-2 inches broad; stem .5-1 inch long, 2-4 lines thick. Woods and open places. Meadowdale and Cemetery, Albany co. August.

Nardia obovata Nees

Rocks. Rainbow falls near Lower Ausable lake, Essex co. September. W. G. Farlow.

Oxalis brittonae Small

Van Cortland park, Westchester co. June. S. H. Burnham.

Perilla frutescens (L.) Britton

Sleepy Hollow near Tarrytown. October. S. H. Burnham.

This is an introduced species.

Phacelia dubia (L.) Small

Shady places on limestone rocks near Jamesville, Onondaga co. October. Mrs L. L. Goodrich.

In our botanies, Pennsylvania is the northeastern limit assigned to the range of this plant. Its discovery near Jamesville by Mrs Goodrich extends its range northward and adds a beautiful little wild flower to our flora. Its usual flowering time is in spring, but these specimens were found in flower the last week in October. The plants grew in patches several feet in diameter. The species is described in Gray's *Manual* under the name *Phacelia parviflora* Pursh.

Phaeopezia retiderma (Cke.) Sacc.

Ground in shaded places. Sandlake, Rensselaer co.

Podosphaera leucotricha (E. & E.) Salmon

Parasitic on living twigs of apple trees. Clyde, Wayne co. W. L. Devereaux.

This species of mildew is peculiar in its perithecia having two sets of appendages, one apical, the other basal. It is specially injurious to the young branches of trees in the nursery, but it rarely attacks the twigs of old trees, though suckers from the base or roots are said to be more liable to attack.

Puccinia simillima Arthur

Leaves and sheaths of *Phragmites phragmites*. Near Savannah, Wayne co. September.

Paspalum muhlenbergii Nash

Bedford Park, Westchester co. September. S. H. Burnham.

Paspalum prostratum Nash

Sandy soil. Manor, Suffolk co. August.

Russula densifolia Secr.

Among decaying leaves in woods. Lake Pleasant. August. This species is closely related to *R. adusta* from which it may be separated by the slight reddening of the flesh where wounded. Our specimens are a peculiar form in which many of the lamellae are forked at the base. They also separate at the inner extremity from the stem and pileus and curl outward revealing the hymenophore beneath. All the specimens found exhibited this character. It indicates a feeble attachment of the hymenium to the hymenophore and is suggestive of a relationship to the genus *Paxillus*. The white spores, however, show that it is not referable to that genus. It may be called variety *paxilloides*.

Russula furcata (Pers.) Fr.

Ground in woods. Near Albany. July. An edible species.

Sarcoscypha rhenana Fckl.

Capular, stipitate or sessile, single or cespitose, often irregular, incurved on the margin when young, externally pruinose tomentose, pale yellow; hymenium pale yellow becoming orange tinted with age or in drying, sometimes slightly pruinose; stem short or almost none, when well developed whitened by a short downy tomentum; asci cylindric; spores elliptic, verrucose, .0008-.0009 of an inch long, .0004-.0005 broad, commonly containing one or two shining nuclei.

Cups 4-8 lines broad; stem 2-6 lines long, 2-4 thick. Decaying leaves and other vegetable matter in woods. Lake Pleasant. August. Its relationship is with *S. imperialis* from which it differs in the character of its spores and in its more highly colored hymenium.

Stereum burtianum n. sp.

PLATE O, FIG. 30-34

Pileus thin, submembranaceous, coriaceous, fibrous, subinfundibuliform, sometimes dimidiate, slightly uneven with radiating fibrous ridges, pallid with a slight cervine or rufescent tint, somewhat shining, the thin margin erect, spreading or decurved, slightly wavy or uneven on the edge and often incised or lacinate; hymenium even or slightly radiately uneven, decurrent, from pale buff to ochraceous buff; stem short, tough, solid, minutely tomentose or pruinose tomentose, subcinereous; spores minute, hyaline, even, globose or subglobose, .00012-.00016 of an inch broad.

Pileus 4-8 lines broad; stem 2-3 lines long, about half a line thick. Bare ground in bushy places. Shokan, Ulster co. September.

Sometimes the pilei of two or more plants growing close together are confluent. When well developed the pileus has a central stem, but sometimes one third or one half is wanting and then the stem is lateral though the pileus is usually erect. In such cases the pileus often appears as if perforate and the upper part of the stem as if hollow. This very distinct species is dedicated to Prof. E. A. Burt who has made a special study of the group of fungi to which it belongs and to whom I am under obligations for aid in the identification of some of the species.

Tricholoma subluteum n. sp.

PLATE O, FIG. 26-29

Pileus broadly campanulate becoming convex, umbonate, obscurely fibrillose, yellow, flesh white; lamellae close, emarginate, adnexed, white; stem equal or slightly tapering upward, solid, fibrillose, yellow, whitish at the pointed base, white within; spores globose, .0002-.00024 of an inch broad.

Pileus 2-4 inches broad; stem 3-4 inches long, 4-8 lines thick. Under coniferous trees. Lake Pleasant. August.

This is a beautiful but apparently a very rare species. It belongs to the second group of section *Sericella*. It is related to *T. chrysenterum* and *T. chrysenteroides*, but may be distinguished from them by its white flesh and lamellae.

Ulmaria rubra Hill.

Balfour place near Aiden Lair, Essex co. July.

The queen of the prairie has been introduced into our State from the West and is found in dooryards and flower gardens where it is cultivated for ornament. It sometimes escapes from cultivation or persists about the sites of old destroyed or abandoned dwellings. It is described in Gray's *Manual* under the name *Spiraea lobata*.

D**REMARKS AND OBSERVATIONS****Agastache scrophulariaefolia (Willd.) Kuntze**

Roadside. Wells, Hamilton co. August. A showy form having purplish bracts and calyx lobes. It is sparingly pubescent and in this respect it approaches *A. nepetoides*, but it has the thicker spikes and more pointed calyx lobes of *A. scrophulariaefolia*.

Amanita muscaria formosa (G. & R.) Fr.

Several instances have been reported to me in which this variety of the fly amanita, a poisonous species, has been eaten without harm. In all these instances except one, the mushroom was eaten by those who were at the time ignorant or unsuspicious of its true relationship. In September, Mr A. P. Hitchcock of New Lebanon reported to me a case in which a sheep ventured to try the edible qualities of this mushroom. He says:

While I was gathering a few specimens of boletus in the pastures one evening last week, my cosset buck sheep, which follows me about like a dog, watched my proceedings with close attention for a time. Then, having assured himself of what I was doing he walked to a small group of the fly amanita, which grows luxuriantly in places in my fields, and proceeded to gobble down about a dozen fair sized specimens, eating the caps as greedily as he eats lump sugar from my hand. This was at least three days ago and perhaps more. He is still with us and in no way worse for his indulgence. Does this mean that I have mistaken some other sort for the fly amanita or that what is food for a buck sheep may be poison for a man? The amanita in question had the orange yellow color and the bulbous stem of *A. muscaria*.

In this as in all other cases of harmless eating of the fly amanita that have been reported to me the variety *formosa* is indicated.

The caps were either wholly or partly yellow. This is the common form in our State. It has the upper surface of the cap either wholly pale yellow or the center only tinged with red or orange, the margin remaining yellow. The form having the whole upper surface of the cap uniformly bright red or orange red is very rare with us. Yet this is the form commonly figured by European mycologists as *Amanita muscaria*. The form having the pale yellow cap was described by Gonnermann and Rabenhorst as a distinct species but Fries reduced it to a variety. The instances mentioned above are strong presumptive evidence of its harmless character and may be taken as another point of difference between this plant and the poisonous fly amanita. They strengthen the claims of those who have regarded the plant with the yellow cap as a distinct species. Still these two mushrooms are so closely allied in size, shape and structure that it does not seem prudent to regard them as distinct species and the yellowish capped one as edible, till full trial and investigation has established the fact beyond question.

Aster roseidus variifolius n. var.

Lower stem leaves ovate or oblong ovate, cordate, acuminate, serrate, petiolate, 2-5 inches long, upper stem leaves much smaller, oblong, entire, sessile or with a very short, widely winged petiole, scarcely more than 1 inch long.

Woods along the shore of Lake Ontario north of Mexico. September.

The whole plant is glandular. The three or four upper leaves are abruptly reduced in size.

Aster undulatus L.

A small form, 1.5-2 feet tall, with leaves ovate or subrotund, the lower petiolate, cordate and serrate with broad teeth, occurs near Minerva. It is related to *A. undulatus abruptifolius*, but is a much smaller plant.

Antennaria neglecta Greene

A dwarf form having the heads densely capitate, the stems of the pistillate plant only 2-4 inches long and of the staminate plant 2 inches or less, occurs at Minerva. It is in flower the first week

in May. In appearance it resembles the western *A. campestris* Rydb.

Boletus nebulosus Pk.

In State Museum report 51, page 292 a description of this species was published, but it was derived from mature specimens, no examples of the young plant having at that time been seen. Young specimens were found near Lake Pleasant in August. The pileus in them is hemispheric, soon becoming convex and is dark gray becoming brown with age. The tubes are at first closed and pallid or brownish. The stem is sometimes pointed at the base and varied above with pale streaks.

Cantharellus cibarius longipes n. var.

Pileus irregular, lobed or wavy on the margin, often centrally depressed and rimose squamose; lamellae very narrow, crowded, strongly decurrent, frequently anastomosing; stem long, its length equal to or exceeding the diameter of the pileus. In groves of spruce and balsam fir. North Elba. September.

Cortinarius amarus Pk.

A form of this species was found having the stem 2-3 inches long. It grows under spruce and balsam firtrees in North Elba, and is easily recognized by its small, irregular, yellow, viscid pileus and its very bitter flavor.

Dalibarda repens L.

Fine specimens of this pretty little plant were found by the roadside between Minerva and Aiden Lair. These have several short peduncles bearing mature seeds and one or two long ones now, July 24, bearing flowers. The early flowers were evidently clistogamic and very fruitful.

Eriophorum alpinum L.

Along the roadside 2 miles south of Aiden Lair. This little alpine cotton grass is rare in our State and it is interesting to find it maintaining itself along the side of a much used public highway.

Hydnum graveolens subzonatum n. var.

Pileus thin, nearly plane, slightly umbilicate, fibrously radiate striate, zonate with narrow, slightly darker zones, fuscous or grayish brown; aculei whitish.

North Elba and Lake Pleasant. August and September.

This northern variety agrees with the typical form in its mode of growth and in its odor, but differs from it in having the pileus more or less zonate and the spines of the hymenium whiter.

Mnium affine ciliare C. M.

Catskill mountains. Mrs E. G. Britton. A fine variety readily known by the long ciliae or hairs that adorn the margin of the leaf.

Otidea onotica (Pers.) Fekl.

Gregarious or cespitose, growing in damp shaded places on decaying wood and bark. North Elba. September. The base is sometimes whitened by mycelioid filaments. The receptacle is rather tough, but the more tender hymenium is sometimes eaten by insects or their larvae.

Pilosace eximia Pk.

This rare little species is peculiar in having reddish spores. They are .00025 of an inch long, .00016 broad. The color of the spores appears to vary in the different species of this genus. In one they are described as black, in another as purplish brown. In structure the genus agrees with *Pluteus* of the pink spored series. At present it contains six species, two of which occur in Europe, two in the West Indies, one in Africa and one in the United States.

Puccinia suaveolens (Pers.) Rostr.

This parasitic fungus may be classed among the useful species. It attacks the noxious Canada thistle and assists in keeping it in check by preventing it from producing seeds. But it also attacks another plant, *Centaurea cyanus*, blue bottle or bachelor's button, which is often cultivated for ornament. In this case also it prevents the development of the flowers and seeds and it may therefore be classed as an injurious fungus, since the flower is the special part for which the plant is cultivated. This plant escaped from cultivation at Menands and was growing like a weed in waste places. On these wild plants the fungus appeared in its uredo stage in May. Later in the season this was followed by the appearance of the teliospores, the final stage, on the

same plants. The fungus on this host plant is designated form cyani.

Senecio vulgaris L.

The common groundsel is sometimes a troublesome weed in gardens. It begins to flower early in the spring and in wet seasons successive crops spring up and continue the production of seed till cold weather stops their growth. In poor soil it will flower when but two or three inches high, in rich soil it may grow 12 inches high and bear many branches. It grows rapidly and requires but a few days in which to develop from seed to maturity. The soil sometimes becomes so filled with its seeds that as fast as one crop of the plants is destroyed another takes its place.

Sisymbrium altissimum L.

The tall sisymbrium is an introduced plant which has proved to be quite troublesome as a weed in some of the northwestern states. The past summer it appeared in the vicinity of Albany. It was probably brought here either from the north or the west where it has become firmly established. By destroying such troublesome weeds when they first appear much future labor and trouble may be saved.

Solidago canadensis glabrata Porter

Generally the early goldenrod, *Solidago juncea*, is the first species to blossom in our latitude. It begins to flower in July. The past season, which is notable for its peculiar influence on some plants, seems to have hastened the time of flowering of some species. On July 24, *S. juncea*, *S. canadensis glabrata*, *S. arguta* and *S. rugosa* were all found growing near each other at North Creek and all were nicely in flower. The glabrate Canada goldenrod is a northern variety and perhaps in its effort to meet the requirements of the short northern seasons it has acquired the habit of blooming early.

Viola cucullata Ait.

In the cold bogs and wet places of the Adirondack region where this blue violet delights to grow, it is not unusual to find it with flowering scapes 6-9 inches long. The flowers much surpass the leaves, often standing twice as high. Such specimens were col-

lected in North Elba. Near Meadowdale a variety occurs in which the petals are variegated with blue and white. This variety has been observed there for several years and appears to be constant in its characters. I have also received specimens of it from other places and it seems strange that it has not been designated by name by some of those botanists who have made a special study of the violets.

***Viola rotundifolia* Mx. -**

Fine specimens of the round leaved yellow violet showing the branched peduncles of the distogamic flowers were found by the roadside 2 miles south of Aiden Lair in July.

***Viola selkirkii* Pursh.**

This pretty, but with us rare, little blue violet has disappeared from its former station in a pine grove near West Albany. It was found last spring in a grove of arbor vitae trees near Minerva, Essex co.

***Xylaria grandis* Pk.**

Van Etten, Chemung co. W. C. Barbour. The specimens on which this species was founded were sent me by G. W. Clinton in 1872. No other specimens of the species had been seen by me till those came from Mr Barbour. They are smaller than the typical form and two of the three specimens sent have the clubs merely mucronate rather than acuminate. The radiating base is wanting in all the specimens, but it appears to have been broken off in collecting. The spores are of the same character as those of the type specimens and I have no doubt of the specific identity of the two fungi. It must be a rare species to escape a second discovery for 30 years.

E

EDIBLE FUNGI

***Collybia acervata* Fr.**

TUFTED COLLYBIA

PLATE 84, FIG. 8-13

Pileus slightly fleshy, convex becoming expanded or nearly plane, glabrous, hygrophanous, pale tan color or incarnate red and sometimes obscurely striatulate on the margin when moist, whitish after the escape of the moisture; lamellae narrow, thin,

close, rounded behind, slightly adnexed or free, whitish; stem equal, hollow, glabrous, usually white tomentose at the base, reddish brown or purplish brown; spores white, elliptic, .00024-.0003 of an inch long, .00016 broad.

The tufted collybia is an inhabitant of the woods of our hilly and mountainous districts. It grows in dense tufts on decaying prostrate trunks of trees and among decaying leaves or on bits of rotten wood half buried by fallen leaves. The caps are rather thin and convex when young, but they expand with age and become broadly convex or nearly plane. When young and moist they are of a pale tan color or brownish red sometimes with a pinkish tint but as the moisture escapes they fade to a whitish color. In the European plant they are said to be umbonate but in the American plant the umbo is rarely present. The gills are quite narrow and close. They are rounded at the inner extremity and either slightly attached to the stem or quite free from it. They are whitish or slightly tinged with pink. The stem is rather slender, rigid but brittle, hollow and smooth except at the base where it is usually clothed with a white tomentum. The color is reddish brown or purplish brown but in the young plant it is often whitish at the top.

The cap is commonly 1-2 inches broad; the stem 2-3 inches long, 1.5-2.5 lines thick. The plants usually grow in clusters and occur during August and September. Though the individual plants are small they grow in such abundance that it is not difficult to obtain a sufficient supply for cooking. They are slightly tough but of good flavor and harmless.

Collybia familia Pk.

FAMILY COLLYBIA

PLATE 84, FIG. 1-7

Pileus thin, fragile, hemispheric or convex, glabrous, hygrophanous, while moist sometimes slightly striatulate on the margin, whitish, grayish or pale smoky brown, sometimes brownish or more highly colored in the center; lamellae thin, narrow, close, rounded at the inner extremity, nearly free, white; stem slender, glabrous, hollow, white or whitish, commonly with

a white villosity at the base; spores globose, .00016-.0002 of an inch in diameter.

The family collybia is similar to the tufted collybia in its mode of growth. It grows in similar localities but is limited in its habitat to decaying wood of coniferous trees. It is smaller and less frequent in occurrence but the tufts or clusters are generally composed of many more individual mushrooms. The caps are thin and fragile but are usually free from insect attack. They are whitish, grayish or brownish sometimes tinged with yellow but they have none of the reddish hues of the tufted collybia. In drying they are apt to become darker than when fresh. The gills are thin, narrow, crowded, white and free from the stem or but slightly attached to it. The stem is smooth, hollow and white or whitish, but like the pileus it becomes darker in drying. Sometimes it appears to be pruinously pubescent in the fresh plant when viewed with a lens. A wholly white variety very rarely occurs.

The cap is 6-12 lines broad; the stem 2-4 inches long, 1-1.5 lines thick. The time of its appearance is during July and August. Its edible qualities are similar to those of the tufted collybia from which it is easily separated by its smaller size and different color.

Russula mariae Pk.

MARY'S RUSSULA

PLATE 85, FIG. 1-8

Pileus at first nearly hemispheric, soon broadly convex, nearly plane or centrally depressed, pruinose and minutely pulverulent, dark crimson or purplish, sometimes darker in the center than on the margin, rarely striate on the margin when old, flesh white, pinkish under the cuticle, taste mild; lamellae moderately close, adnate, white when young, pale yellow when old; stem equal, solid or slightly spongy in the center, colored like or a little paler than the pileus, usually white at the top and bottom, rarely entirely white; spores pale yellow, globose, .0003 of an inch broad.

This russula is a beautiful and easily recognizable species, though somewhat variable in its colors. The cap is at first

nearly hemispheric, but it soon becomes convex and continues to expand till it is nearly plane or centrally depressed. The margin is even when young and generally remains so in maturity, but sometimes it becomes radiately striate. The surface appears to the naked eye to be pruinose or covered with a bloom, but under a lens it is seen to be dusted with minute particles which, under the action of water, are separable and give reddish stains to any white surface against which the moistened cap may be rubbed. This pruinosity is one of the best distinguishing features of the species. A little boy once went with his mother to look for mushrooms. They came on a group of Mary's russula and the little boy, noticing the bloom on the caps and recognizing in it a resemblance to the bloom of plums, cried out in childish glee "plummies, plummies." He was evidently a close and thoughtful observer and could distinguish at sight this russula from all others. The flesh of the cap is white, but has a pinkish tint immediately beneath the cuticle which is separable on the margin but adnate in the center of the cap. The taste is mild, but occasionally a specimen may be found in which it is slightly and tardily acrid. The color varies from deep crimson to purple. The center is sometimes more highly colored than the margin and in the purple specimens the margin in old plants is apt to fade to a whitish color and to become striate. The gills are white when young but with advancing age they become yellowish. They are nearly all of full length and are therefore wider apart at the margin of the cap than at the stem. A few are forked at the base and the interspaces are veiny. The stem is generally cylindric but occasionally tapering downward or pointed at the base. It appears to the naked eye to be smooth but under a lens it is slightly pulverulent. It is solid or slightly spongy and white within and colored like or a little paler than the cap externally except at the ends where it is white. Forms occasionally occur in which the stem is entirely white.

The cap is 1-3 inches broad; the stem 1-2 inches long, 3-5 lines thick. It grows both in woods and in open grassy places and is found in July and August. It is not as highly flavored as some

other russulas but I have no hesitation in placing it among the edible species.

***Russula furcata* (Pers.) Fr.**

FORKED RUSSULA

PLATE 85, FIG. 9-14

Pileus convex becoming nearly plane, centrally depressed or funnel form, glabrous, even on the margin which is at first incurved, then spreading and acute, the thin adnate pellicle subseparable on the margin, greenish or brownish green, flesh white, taste mild; lamellae thickish, subdistant, often forked, with shorter ones intermixed, adnate or slightly decurrent, white; stem equal or nearly so, solid or spongy in the center, white; spores white, subglobose, .0003-.00035 of an inch long, .00025-.0003 broad.

The forked russula grows in woods and is a variable species. Two distinct European varieties have been described but our specimens do not fully agree with either of them nor with the typical form. The cap varies in color from a pale yellowish green or olive green to a dark brownish green, the center often being darker than the margin. Sometimes purplish hues are intermingled with the green, but these are apt to disappear from the dried specimens. The surface is slightly viscid when moist and sometimes it is rugosely roughened or reticulate in places. The margin, though thin, is not striate. The flesh is white and its taste mild. I have detected no bitter flavor to our form but the European form is said to have it. The gills are rather thick, moderately wide apart, persistently white and attached to the stem by their full width. Many of them are forked, the bifurcations occurring most frequently near the stem and the margin. There are also short gills which do not reach the stem. The interspaces are marked by transverse veins or ridges, but I do not find this character ascribed to the European form. The stem is nearly or quite cylindric, solid or when old somewhat spongy in the center, smooth and white.

The cap is 2-4 inches broad; the stem 1.5-3 inches long, 5-8 lines thick. It may be found in July. In my trial of its edible qualities it seemed more tough than some other russulas, but the

flavor was satisfactory and the species is deemed worthy of a place in our edible list even though the European plant has been published by some writers as poisonous.

Pholiota vermiflua Pk.

WORMY PHOLIOTA

PLATE 86, FIG. 13-20

Pileus convex or nearly plane, glabrous or occasionally floccose squamose on the margin, sometimes areolate rimose in the center, white, occasionally slightly tinged with yellow; lamellae close, adnexed, white becoming ferruginous brown, generally minutely eroded on the edge; stem hollow, equal, striated at the top, white, the annulus more or less floccose on the lower surface, lacerated or evanescent, white; spores elliptic, ferruginous brown, .0005 of an inch long, .0003 broad.

The wormy pholiota is closely related to the early pholiota, from which it may be separated by its larger size, thicker flesh, stouter stem, whiter color and the tendency of its pileus to crack into areas in the center. It is very liable to be infested by the larvae of insects and this is suggestive of the specific name.

The cap in the young plant is very convex or hemispheric but with advancing age it expands and becomes nearly or quite plane. The central part of the surface often cracks into areas giving it a scaly appearance. It also sometimes splits on the margin. It is smooth or occasionally slightly floccose scaly on the margin from the remains of the veil. The flesh is white. The gills are at first white but they become rusty brown with age. They are closely placed, excavated at the stem end and often whitish and minutely eroded on the edge. The stem is nearly cylindric, hollow, smooth, white and often striated at the top. Its collar is also white, somewhat floccose on the lower surface, often slight, lacerated and disappearing in mature plants, leaving the stem without a collar.

The cap is 2-4 inches broad; the stem 2-3 inches long, 3-5 lines thick. The plants are usually found in rich soil in grain fields, waste places and about manure piles and occur from June to August. When sound and well cooked the flavor is excellent and the mushroom is a fine addition to our table delicacies.

Psilocybe foenisecii (Pers.) Fr.

HAYMAKERS PSILOCYBE. MOWERS MUSHROOM

PLATE 86, FIG. 1-11

Pileus thin, campanulate or convex, obtuse, glabrous, hygroph-anous, brown or reddish brown when moist, paler when dry; gills broad, adnate, minutely crenulate on the edge, ventricose, subdis-tant, brown; stem slender, nearly straight, hollow, rigid, fragile, glabrous, pruinose at the top, pallid or rufescent; spores brown, subelliptic, .0005-.0006 of an inch long, .00025-.0003 broad.

The haymakers psilocybe is a small but very regular, neat and attractive species which gets its name from its usual place of growth. This is in grassy places, on lawns or in meadows, where it is often destroyed by the mower while cutting grass. Its cap is conic or somewhat bell shaped when young, but it becomes more convex with age. When fresh and moist it is dark brown or reddish brown and is usually marked on the margin by darker parallel radiating lines. By the escape of the surplus moisture these lines disappear and the cap becomes paler, assuming a grayish or ashy gray color. The moisture generally escapes first from the center of the cap though the flesh is thicker there than on the margin. This gives a somewhat variegated appearance to the cap while the moisture is escaping, but after the evaporation is completed the color is nearly uniform. Sometimes the center of the cap has a reddish or tan colored hue, in which case this color is generally retained for a time after the escape of the moisture. The cap is generally brown in completely dried and shriveled specimens. The gills are rather broad, not crowded, somewhat narrowed behind and attached to the stem. They are pale brown when young, blackish brown when old. The stem is slender, usually long and nearly straight, hollow, easily broken and paler than the moist cap. It is sometimes tinged with red. The spores in our plant slightly exceed the dimensions given to the spores of the European plant.

The cap is 6-12 lines broad; the stem 2-3 inches long, about 1 line thick. This mushroom grows gregariously in rich grassy places, generally appearing in May and June. Sometimes it ap-pears in great numbers and in successive crops, otherwise it would

be unimportant as an edible mushroom on account of its small size. It has been very abundant in the capitol lawn the last two seasons. It has not a very high flavor but it is harmless and relishable when fried in butter and may therefore be classed as an edible species, though some authors say that there are no edible species of *Psilocybe*. When uncooked its taste is strong and disagreeable.

Bovista pila B. & C.

ROUND BOVISTA

PLATE 84, FIG. 14-18

Peridium globose or subglobose, 1-3 inches in diameter, the outer coat very thin, at first smooth, white or whitish, soon breaking up into minute scurfy scales or becoming minutely rimose squamulose, finally disappearing and revealing the rather firm papery but persistent, tough, glossy brown inner coat; capillitium dense, persistent, brown; spores even, globose, .00016-.0002 of an inch broad.

The round bovista takes its specific name from its resemblance to a ball. It is quite globose and about 2 inches in diameter when well developed, but sometimes it is more or less irregular. When young it is white or whitish externally and pure white within. It is edible only while in this condition. As soon as the interior begins to change color it is no longer fit to eat and should be discarded. As it advances in age the surface or outer coat shrivels and breaks up into minute scales or scurf and after a time disappears. The inner coat is then smooth and tough like parchment. In maturity it is brown, purplish brown, seal brown or dingy coppery brown, sometimes shining and sometimes showing obscure patches of the exceedingly thin dried and brownish outer coat still adhering to it. It ruptures irregularly. The interior is then seen to be a dense towy and more or less dusty mass similar to the interior of a fully matured puffball. In this condition it often persists through the winter and may be found in fairly good condition for specimens after its hibernation. It grows either in woods, pastures or meadows and in suitable weather may be found from July to September.

F

NEW YORK SPECIES OF CRATAEGUS

The number of published species of *Crataegus* found in the United States and Canada has increased surprisingly within the last five years. In the edition of Gray's *Manual* issued in 1890, 10 species and three varieties are recognized as belonging to the territory covered by its flora. In the *Illustrated Flora* of Britton and Brown, the second volume of which contains the description of the species of this genus and which was issued in 1897, 15 species and three varieties are recognized, but the territory covered is somewhat larger than that of the *Manual*. Britton's *Manual* issued in 1901 increases the number to 31 species and retains but one variety. In the *Silva of North America*, volume 4, published in 1892, 14 species are described, but in volume 13, which appeared in 1902, the number of species is increased to 84 and the statement is made that this does not include some imperfectly known arboreous species nor the merely shrubby species. In the *Flora of the Southern States* by J. K. Small, issued in 1903, 185 species are described. Varieties are not recognized. In an article devoted to the species of *Crataegus* found in Rochester and its vicinity and published in the *Proceedings of the Rochester Academy of Science*, volume 4, 1903, C. S. Sargent has described 28 new species and recorded the occurrence of 13 others exclusive of two introduced species which occasionally escape from cultivation. This makes 41 species for the limited area of Rochester and its vicinity, a number greater than that given in Britton's *Manual* for the entire area covered by it two years ago. From these data the inference is scarcely avoidable that many of the recently described species must resemble each other closely and must be founded on slight variations of specific characters. If this inference is well founded, the conclusion is evident that such closely allied species can not be recognized without a thorough knowledge of their distinguishing characters and this knowledge can scarcely be obtained without careful study and close observation. To properly represent such species in the

herbarium, a set of good and well prepared specimens taken in the various stages of development from flowering time till the ripening and fall of the fruit, is required.

The genus *Crataegus*, as represented by our species, includes shrubs and trees which may be roughly but easily separated from species of other genera of the same family by the long spines or thorns with which their trunks and branches are armed. The common and local names applied to these plants are thorn, thorn apple, thorn bush, thorn tree, haw and hawthorn. They are nearly all suggested by this very prominent character of these plants. Some species are small shrubs, only 2 or 3 feet high with a basal stem diameter of scarcely 1 inch, others are trees 30 feet or more high with a basal diameter of the trunk of 1 foot or more. There is no well marked line of distinction between those which are classed as trees and those which should be called shrubs. They insensibly run together. The same species may be a shrub in one place and a tree in another.

The branches of many species are widely spreading giving a broad rounded head to the tree similar to that of an appletree. Often the lower branches spread horizontally and the upper diverge at a small angle giving a more conic outline to the top. The punctate thorn usually has most of its branches horizontally spreading. This gives it a broad, flattened or depressed head and makes the species easily recognizable at a distance. The shrubby species branch from the base and when several clumps grow near each other they form almost impenetrable thickets. The young shoots of the branches are at first green but with advancing age the upper surface gradually assumes a reddish brown or other color which later encircles the whole shoot. During the second or the second and third years the color becomes, in most species, some shade of gray or ashy gray.

The spines that grow from the trunk and branches are modified or peculiarly developed branches. They are themselves sometimes branched and generally they agree in color with the branch to which they are attached. They usually have a bud at one side of the base and sometimes one on both sides. These buds develop

into a leaf, a branch or a cluster of flowers the next year. In breaking a spine from its branch the leaf, branchlet or flower cluster is likely to be torn away with it unless care is taken to avoid it. The young spine is often adorned with one or more narrow foliaceous bracts which are quickly deciduous. The spines of the hawthorn are sometimes elongated and leaf bearing. They then appear like a short leafy branch terminating in a sharp leafless point.

The leaves are alternate and simple but generally more or less distinctly lobed and serrated on the margin. Those of young and vigorous shoots often differ from others on the same tree in size, shape and lobing. The teeth of the margin are nearly always tipped with glands which may vary in color in different species. The teeth themselves vary according to the species. They may be short or long, narrow or broad, blunt or sharp pointed, straight or incurved. The surface of the leaf blades may be smooth, pubescent or scabrous. In many species the upper surface of the young leaves may be coated with deciduous hairs which soon disappear leaving the surface of the mature leaves glabrous. The lower surface is generally paler than the upper. In some species the young unfolding leaves are tinged with brownish red or bronze red but they become green with advancing age. The leaves are normally petiolate and stipulate but the stipules soon disappear and in some species the petioles are short and so widely margined by the decurrent leaf blades that the leaves appear to be sessile. The petioles are often furnished with a few glands which may be either sessile or stalked. They are often more highly colored when old than when young, and are apt to be shorter on vigorous shoots than on fruiting or lateral branches. In general outline the leaf blades may vary in different species from oblanceolate or spatulate to obovate, ovate, oblong ovate, elliptic, oval or orbicular.

The buds are compact and globular with very broad blunt scales. In some species they are covered with a varnish which becomes sticky in warm weather. When they burst in spring the inner scales enlarge rapidly, become elongated and assume pink

reddish or yellowish hues. They are glandular on the margin and in some species on the surface also. These scales are generally soon deciduous.

The flowers in our species are, with one exception, *Crataegus uniflora*, produced in clusters at the ends of short leafy terminal or lateral branches. In the earliest species to flower in our latitude they appear about the end of the first week in May, in the latest, the first week in June, making the flowering season about one month long. In nearly all cases the flowers open and their petals fall before the leaves are fully developed. The flower stems or peduncles may be long or short, simple or branched, glabrous or hairy, according to the species. The branching peduncles frequently support three flowers each, the central flower opening a little earlier than the two lateral. The calyx is superior and five lobed, the petals are five, the stamens vary from 5 to 20 and the pistils from 1 to 5. The stamens are normally 5, 10, 15 or 20 in any given species, but by the suppression of some or the union of two adjacent filaments such definite numbers are not always found. Nevertheless the number of the stamens is now utilized as a specific character. The color of the anthers may be pale yellow or whitish, pink or rosy red, purplish red or violaceous, and though these colors are very fleeting they are recognized as having, in many cases, specific value. The calyx lobes are generally tipped with a single gland, their margins may be entire or furnished with sessile or stalked glands. They are erect in bud but spreading or reflexed in anthesis and in some species they later become again erect or incurved. In many species they also become red on the inner basal surface as they advance in age. They are sometimes deciduous from the ripe fruit, specially in species belonging to the section *Tomentosae*. The petals are nearly always white in our species. In one or two they show a tendency to become rosy tinted when they begin to wither. They are quickly deciduous. They are sometimes eroded or wavy on the edge, and are generally furnished with a short claw at the base.

The time of ripening of the fruit extends from the middle of August to the middle of October. The number of fruits in any

cluster is generally less than the number of its flowers because some flowers fail to produce fruit. The fruit may be globose, oval, oblong, ovate or pyriform. It is not invariably of the same size and shape on the same tree but it is now thought to furnish characters of specific value. When the flower stem is short and stout the ripe fruit is likely to be erect. If the flower stem is long and slender the ripe fruit is likely to droop on its stem. In some species the hairiness of the calyx tube of the flower persists and the fruit is hairy, in others it disappears and the fruit is smooth. In some the fruit falls when it is ripe or soon after, in others it hangs on the branches after the leaves have fallen, persisting sometimes till winter or in rare cases and partially till the following spring. In most species the color of the ripe fruit is some shade of red, either orange red, scarlet, vermilion or crimson. In some it is yellow, greenish yellow, or these colors varied with a red cheek. In some species the fruit has a distinct pruinosity or bloom, in others an indistinct or scarcely noticeable bloom is present. Such fruits have a dull or opaque color but a little rubbing of the surface brings out a shining color. The cuticle in some species may be stripped from the fully ripe fruit as from a very ripe peach or pear. The flesh or pulp in some is dry and mealy, in others juicy and soft. It may be whitish, greenish yellow, orange or red. In many species the fruit has an agreeable flavor and is sweet or slightly acid and edible. In some cases it has been utilized in making jelly. In size it varies much, being but three or four lines in diameter in some and nearly an inch in others. In most of our species it is from five to seven lines in diameter. The number of nutlets of the fruit generally equals the number of styles in the flower. In the section *Tomentosae* the nutlets differ from those of the other sections in having the inner faces excavated. Thorn bushes appear to have in some cases their "off years" like apple-trees. A bush may be loaded with fruit one year and the next have none. Sometimes the fruit fails because of late frosts. This happened about Lake Placid the past season. A severe frost the last week in May killed the stamens and pistils even in the unopened flower buds, and though the petals were apparently

unharmd and the flowers appeared as usual at a distance, the essential organs having been killed, no fruit developed.

Cattle sometimes browse on the twigs of thorn bushes. In such cases the injured branches put forth many new shoots which are short and dense and form an almost impenetrable surface growth. If the bush is low enough to be browsed from top to bottom it gradually assumes a conic shape. If it is so tall that cattle can not reach the ends of the upper branches these continue their normal growth and the lower part of the bush assumes a conic shape and the dense ramification. The whole bush then appears somewhat like two cones with their vertices united, the lower with its vertex pointing upward, the upper with its vertex pointing downward as in an hourglass. This behavior of thorn bushes under the pruning given them by browsing cattle indicates their suitability for hedges.

Herbarium specimens of species of this genus should be collected at three different times. The first collection should be made when the plant is in flower. This collection will show the characters of the flowers, of the young shoots and of the young and unfolding leaves. The second should be made when the leaves have become fully developed. This will show the character of the mature leaves and of the young fruit. The leaves at this time are in much better condition than late in the season when the fruit is ripe. At this time it is also well to collect specimens of the young vigorous shoots, since the leaves on these are often larger and differ more or less in shape from those on older and less vigorous lateral or fertile branches. The third collection should be made when the fruit is ripe. Its object should be to get this in as good condition as possible. Insect larvae and parasitic fungi often injure and deform the fruit and it is well to select as far as possible such specimens as are most free from these pests. Sometimes nearly every fruit on a shrub or tree is found to be injured by them. In some species the fruit ripens very late. In such cases the leaves are ready to fall or have already partly fallen when the fruit is ripe. Specimens bearing ripe fruit should not be severely pressed lest the fruit be crushed. It is well to dry

some of the fruit without pressing. It is important that the three collections be made from the same tree or shrub in order to avoid the danger of confusing two or more closely related species. Sometimes two or more species grow together in one clump and in such cases special care is necessary lest the intermingled branches lead to inextricable confusion of species. To guard against any slip of memory it is well to mark the trunk of every tree or shrub from which specimens are taken, giving to each a number corresponding to a number attached to the specimens taken from it. With a pocket knife shave the rough bark from a small place on one side of the trunk and inscribe the number on this smooth place. It is well in every case to select the same side of the trunk, for example, the north side. Then no time need be lost in looking for the mark on the other sides.

Because the branches are often coarse and crooked and armed with stout spines, strong pressure is necessary to make good herbarium specimens of them. A screw press is recommended for this purpose. It is also well to loosen the spines by partly splitting them from the branch before putting the samples in press. It is desirable to know the date of each collection. It should therefore be recorded on the ticket.

PRUINOSAE

Fruit medium, red when ripe, pruinose; stamens 10-20; leaves thick or subcoriaceous, commonly bluish green, glabrous when mature.

The pruinosity of the unripe fruit is one of the most available characters by which to recognize the species of this group. The two species here described differ in the number of their stamens and the color of their anthers.

Stamens 20, anthers pale yellow or whitish *C. conjuncta*

Stamens 10, anthers pale purple or pink *C. dissona*

Crataegus conjuncta Sarg.

Conjoined thorn

Rhodora, 5:57

Large shrub 8-12 feet tall with widely spreading or ascending branches; leaves ovate, broadly ovate or oval, acute or subacu-

minate at the apex, rounded or slightly cuneate at the base, or on vigorous young shoots larger, truncate or slightly concave cuneate, sometimes broader than long, sharply and unequally serrate, generally with 3-4 short, acute or sharp pointed lobes each side, glabrous, yellowish green, 1-2 inches long and nearly as broad at flowering time, larger, thicker and bluish green above when mature, pale below, petioles slender, 6-15 lines long, usually slightly margined and bearing a few scattered glands; inflorescence glabrous, flowers 5-10 in a cluster, peduncles 6-10 lines long, stamens 20, anthers pale yellow or whitish; fruit globose or depressed globose, somewhat angular, often broader than long, pruinose, erect or drooping, red when ripe, crowned by the incurved, spreading or reflexed, persistent calyx lobes, nutlets 4-5.

Clayey hillsides. Albany and North Greenbush. Flowers from the middle to the end of May, fruit ripens from the first to the middle of October and falls gradually, but sometimes a few fruits hang on the branches all winter. The unfolding leaves are sometimes tinged with brownish red. On young and vigorous shoots the basal pair of leaf lobes are sometimes larger and more widely spreading than the others.

***Crataegus dissona* Sarg.**

Dissonant thorn

Rhodora, 5: 60

Shrub 6-10 feet tall with widely spreading or nearly erect branches; leaves ovate, broadly ovate or rhomboidal, 1-1.5 inches long and nearly as broad at flowering time, thin and yellowish green, acute or sharp pointed at the apex, rounded or broadly cuneate at the base, often tinged with brownish red as they unfold, sharply serrate, with 3-4 slight, acute or sharp pointed lobes each side, glabrous, larger, firmer and bluish green above when mature, paler below, those on vigorous young shoots larger and often truncate at the base, sometimes with the basal pair of lobes enlarged, petioles slender, 6-12 lines long, often slightly enlarged and glandular at the top; flowers on slender glabrous peduncles, 5-8 in a cluster, stamens generally 10, sometimes 7-9, anthers pale purple or pink; fruit globose or depressed globose, pruinose, dark

red or crimson when ripe, the boat-shaped calyx lobes erect or spreading, their tips often deciduous, nutlets 3-5.

Clayey soil. Albany, Copake, Lansingburg and Thompsons Lake. Flowers about the middle of May, fruit ripens from the first to the middle of October. Distinguished from the preceding species by its fewer stamens, pink or purplish anthers and crimson fruit. *C. pruinosa* differs from both in having 20 stamens with pink anthers. It is a common species about Albany.

INTRICATAE

Fruit medium, yellowish green, orange red or crimson, nutlets 2-5, ridged on the back; corymbs few flowered; leaves thick, subcoriaceous.

Small, rather late flowering shrubs.

Leaves hairy when young 1

Leaves glabrous *C. intricata*

1 Anthers pink or pinkish purple *C. peckii*

1 Anthers pale yellow *C. modesta*

Crataegus intricata Lange

Intricate thorn

Small shrub 3-8 feet tall with few erect or spreading branches; leaves ovate, broadly ovate, elliptic or oblong elliptic, thin when young, becoming thick and firm with age, acute at the apex, broadly rounded or cuneate at the base, sharply serrate, with 3-4 acute lobes each side, the basal pair, on leaves of young vigorous shoots, often enlarged and distinctly separated from the pair above by deep sharp excavations, glabrous both sides, petiole slender, 4-12 lines long, glandular, slightly margined at the apex; flowers in clusters of 4-8, on short, mostly glabrous peduncles, calyx lobes lanceolate, slightly lacinate serrate, stamens 5-10, anthers pale yellow; fruit erect, subglobose or obovate, pointed at the base, pale red or orange red, nutlets 3-4.

Hillsides and shaly knolls. Albany and Lansingburg. Flowers May 20 to June 1, fruit ripens the last week in September and the first week in October, and soon falls. In falling it often carries the peduncle with it. The spines are slender, straight or nearly so and usually 1-1.5 inches long.

Crataegus modesta Sarg.*Modest thorn*

Rhodora, 3: 28

Small shrub 2-5 feet tall with irregular short branches; leaves broadly ovate, ovate or oblong ovate, acute at the apex, rounded or cuneate at the base, on young and vigorous shoots often truncate or slightly cordate, serrate, with 3-4 short, broad, acute lobes each side, at flowering time pale green and hairy above, paler and villose below, specially on the midrib and principal veins, when mature thick and firm, dark green and scabrous above, much paler below, 1.5-2 inches long, 1-1.5 broad, petioles 4-12 lines long, glandular, villose, margined at the apex, sometimes on vigorous shoots nearly to the base, often becoming red with age; flowers large, 3-6 in a cluster, on short, villose, mostly simple, peduncles, calyx tube hairy, its lobes slightly hairy, laciniate serrate, reflexed in flower, stamens 10, anthers pale yellow; fruit erect, subglobose, short oblong or pyriform, greenish yellow, orange red or greenish with a red cheek, hairy, nutlets 3.

Clayey and shaly soil. Albany, Rensselaer and Lansingburg. Flowers open the last week in May or the first week in June, fruit ripens late in September. The spines are variable, being slender or stout, straight or curved, and 1-1.5 inches long. On some clumps they are very scarce. The young shoots are more or less villose.

Crataegus peckii Sarg.*Peck's thorn*

Rhodora, 5: 63

Small shrub 2-6 feet tall, sparingly branched; leaves ovate or broadly ovate, acute at the apex, broadly rounded or concavely cuneate at the base, on young and vigorous shoots often truncate, serrate, divided into 3-4 short, broad, acute or blunt lobes each side, when young, hairy above with appressed whitish hairs, villose below on the midrib and principal veins, when mature, firm, dark green and scabrous above, much paler below, the basal pair of lobes often much enlarged and more distinct, 1.2-2 inches long, nearly as broad or on young vigorous shoots 2-2.5 inches long; flowers large, 3-6 in a cluster, supported on short, villose, simple peduncles,

calyx tube glabrous, its lobes glabrous, laciniate serrate above the middle, stamens 10, anthers pink or pinkish purple, filaments usually white; fruit erect on short slightly villose peduncles, subglobose or short oblong, glabrous, yellowish green when ripe, the calyx lobes mostly deciduous, nutlets 3-4.

Shaly soil. Lansingburg. Flowers the last week in May or the first week in June, fruit ripens early in October and soon falls. The species is closely related to *C. modesta* from which it may be separated by its mostly broader leaves, its less hairy inflorescence, pink or pinkish purple anthers and glabrous yellowish green fruit. In this as in the two preceding species the fruit is crowned by a prominent rim which surrounds the calyx cup. The spines are slender, straight or slightly curved and 1.2-2.5 inches long.

MOLLES

Fruit, large, bright red and shining when ripe, often hairy, specially when young; inflorescence villose tomentose; leaves large, broad, softly hairy when young.

The three species here recorded are trees or large shrubs with edible fruit.

Anthers pale yellow or whitish *C. champlainensis*

Anthers pink, dark red or purple 1

1 Leaves often convex, calyx lobes hairy on the

inner surface

C. pringlei

1 Leaves plane, calyx lobes hairy on both surfaces *C. exclusa*

Crataegus champlainensis Sarg.

Champlain thorn

Rhodora, 3:20. Silva N. A. 13:105, t. 669. N. Y. State Mus.

55th An. Rep't, p.944

Tree or large shrub 10-20 feet tall with widely spreading branches; leaves ovate or broadly ovate, 2-2.5 inches long, 1.5-2 broad at flowering time, larger when mature and on vigorous young shoots, acute at the apex, rounded, truncate, broadly cuneate or slightly cordate at the base, slightly and sharply lobed, coarsely and sharply serrate, when young pubescent above with whitish appressed hairs, pubescent beneath and villose on the

midrib and principal veins, petioles villose and glandular; corymbs commonly few flowered, peduncles and calyx covered with long matted whitish hairs, stamens 10, anthers pale yellow or whitish; fruit oblong obovate or subglobose, often narrowed toward the base, bright red or scarlet, 7-8 lines long, 6-7 broad, nutlets 3-5.

Clayey soil. Port Henry, Crown Point, Fort Ann, Albany. The trees found in the vicinity of Albany differ from those found in the more northern localities in having broader and more rounded leaves, which are sometimes blunt at the apex and often have the margin coarsely wavy, curved or arched as if there was an excessive development of the lateral tissues. The anthers are whitish, not pale yellow as in the type, and the fruit is globose or oval, slightly umbilicate and persistently hairy. It is the first species to blossom about Albany, the flowers appearing from May 10-15, and the fruit ripens and falls early in September. Perhaps these trees belong to a distinct species. The trees in the Fort Ann locality have recently been cut down.

***Crataegus pringlei* Sarg.**

Pringle's thorn.

Rhodora, 3:21. Silva N. A. 13:111, t. 672. N. Y. State Mus.
55th An. Rep't, p.944

Tree or large shrub 12-25 feet tall with widely spreading branches and a broad rounded head; leaves broadly ovate or oval, 1-2 inches long and nearly as broad at flowering time, acute or bluntly pointed at the apex, subtruncate or broadly cuneate at the base, coarsely and sharply serrate, with 3-4 short broad acute lobes each side, pubescent above with short appressed whitish hairs, slightly villose below on the principal veins and midrib, yellowish green above, paler below, often convex by the deflection of the margins, petioles slender, villose; corymbs few flowered, stamens 5-10, anthers pink or pinkish purple, calyx lobes hairy on the inner surface, peduncles short, villose; fruit subglobose, oval or oblong, sometimes slightly narrowed toward the base, generally hairy at the ends, 6-7 lines long and nearly as broad, bright red or scarlet, the calyx lobes spreading or erect.

Clayey soil. Albany and Albia, Rensselaer co.

When in flower the colored anthers easily separate this species from the preceding one, later it may be recognized by the convexity of many of the leaves. The young unfolding leaves are sometimes tinged with red. On vigorous young shoots the leaves often have the basal pair of lobes somewhat enlarged and more distinct than the others.

***Crataegus exclusa* Sarg.**

Excluded thorn

Rhodora, 5:108

Shrub 8-12 feet tall, with widely spreading or ascending branches; leaves similar to those of the preceding species but without the convexity seen in them; flowers similar but the calyx and peduncles more densely villose or tomentose, the calyx lobes more narrow, elongated and hairy on both surfaces; fruit longer and more narrowed toward the base.

Clayey soil. Crown Point and Fort Ann. May, September.

Formerly united with *C. pringlei* but separated from it because of its more shrubby habit, more hairy inflorescence and longer fruit.

DILATATAE

Fruit medium or large, subglobose, bright red or scarlet, nutlets 5, ridged on the back; flowers having 20 stamens with rose colored anthers; leaves broad, thin.

***Crataegus dilatata* Sarg.**

Broad leaved thorn

Bot. Gaz. 31:9. Silva N. A. 13:113, t. 673

Tree or large shrub 10-20 feet tall with widely spreading or ascending branches and a broad rounded head; leaves thin, ovate or deltoid ovate, acute at the apex, subtruncate or slightly cordate at the base, with 4-6 short, acute or sharp pointed lobes each side, serrate with unequal sharp pointed teeth, when young minutely pubescent above with short, stiff, appressed, whitish hairs, glabrous below or with a few hairs on the midrib and in the axils of the principal veins, 1.5-3 inches long when mature, nearly as broad, those of vigorous young shoots often with the basal pair

of lobes enlarged and more distinct, petioles slender, 8-18 lines long, slightly villose in the furrow when young, distantly glandular, often reddish toward the base, becoming more red with age, this color sometimes extending to the midrib and principal veins; corymbs 6-10 flowered, peduncles slightly hairy or glabrous, rather long, stamens 20, anthers rose color, calyx tube slightly hairy, its lobes glandular serrate, hairy on the inner surface; fruit globose or oval, 6-8 lines long, 6-7 broad, umbilicate at the base, drooping, bright red, nutlets 4-5, flesh yellowish, well flavored, edible.

Clayey soil. Flowers the last week in May, fruit ripens in September. Thompsons Lake, Albany co. and Gansevoort, Saratoga co. In the latter locality it forms a tree 15-20 feet tall with a trunk diameter of 4-6 inches. On some trees the fruit is globose, on others it is oval. The leaves sometimes become convex as in *C. pringlei*. The fruit stems sometimes become red in the upper part.

LOBULATAE

Fruit medium or large, subglobose or oblong, bright red or crimson, nutlets 3-5, distinctly grooved on the back; inflorescence villose or glabrous, stamens 5-15, anthers rose color.

Leaves glabrous beneath, stamens 5-8 *C. holmesiana*

Leaves somewhat hairy beneath, stamens 5-10 *C. lobulata*

Crataegus holmesiana Ashe

Holmes thorn

Bot. Gaz. 31: 10. Silva N. A. 13: 119, t. 676

Tree or large shrub 12-25 feet tall with widely spreading or ascending branches; leaves thin, ovate, 1-1.5 inches long, 9-15 lines broad at flowering time, larger and firmer when mature and on vigorous young shoots sometimes with the basal pair of lobes enlarged and more divergent, acute at the apex, broadly rounded or subtruncate at the base, sharply serrate with slender pointed teeth, with 4-5 short acute lobes each side, pubescent above when young with minute appressed whitish hairs, glabrous and slightly paler below, petiole slender, 6-12 lines long, glabrous or with a few hairs and reddish glands; flowers 8-12 in a cluster, 5-8 lines broad, on slender, glabrous or slightly hairy peduncles, calyx glabrous, often tinged with red, the lobes narrow, linear, slightly

glandular, stamens generally 5, sometimes 5-8, anthers purple; fruit subglobose, oblong or obovate, generally narrowed toward the base, bright red or crimson, crowned with the persistent, erect or incurved calyx lobes, nutlets 3-5, flesh yellow.

Clayey soil. Crown Point, Fort Ann, Thompsons Lake and Albany. It flowers from May 15-25, fruit ripens the last week in August and the first week in September. The foliage is commonly yellow green, but it is sometimes dark green.

***Crataegus lobulata* Sarg.**

Lobulate thorn

Rhodora, 3: 22. Silva N. A. 13: 117, t. 675

Tree 15-30 feet tall and a trunk diameter of 6-12 inches; leaves oval, ovate or oblong ovate, at flowering time 1.5-2.5 inches long, 1-2 broad, larger when mature, pubescent with soft appressed whitish hairs above, slightly hairy below, specially on the midrib and principal veins, acute at the apex, rounded or broadly cuneate at the base, sharply serrate, with 4-5 sharp pointed distinct lobes on each side, petioles slender, loosely villose or tomentose, 1-1.5 inches long, becoming reddish or tinged with red in maturity; flowers on slender, villose or tomentose peduncles, the calyx often hairy below and its lobes hairy on the inner surface, stamens usually 10, sometimes 5-10, anthers reddish purple; fruit oblong or subglobose, crowned by the persistent erect or incurved calyx lobes, when ripe, crimson, 6-8 lines long and nearly as broad, nutlets 3-5, flesh yellow, edible.

Clayey soil. Crown Point. It blossoms from the 20th to the end of May and ripens its fruit late in September. Its foliage is yellowish green. It is closely related to the preceding species from which it may be separated by its larger size, the hairiness of the lower surface of the leaves, the more hairy inflorescence, more numerous stamens and its later ripening fruit.

FLABELLATAE

Fruit medium, scarlet or dark red, nutlets 3-5, ridged on the back; stamens 10-20; leaves membranaceous but firm when mature.

Anthers pink or purplish

C. contigua

Anthers pale yellow or whitish

C. irrasa

Crataegus contigua Sarg.*Contiguous thorn*

Rhodora, 5: 115

Shrub 6-10 feet tall with spreading or ascending branches; leaves thin, ovate, acute or acuminate at the apex, rounded or broadly cuneate at the base, serrate, with 4-5 distinct, sharp pointed or acuminate lobes each side, at flowering time pale green and clothed above with short appressed whitish hairs, glabrous below, when mature, firm, dark green above, paler below, 1.5-2.5 inches long, 1-2 broad, petioles slender, glabrous, slightly glandular, 6-12 lines long; flowers on slender glabrous peduncles, calyx lobes abruptly narrowed from broad bases, linear, entire or with occasional glands toward the base, stamens 20, anthers purple or pinkish purple; fruit erect or drooping, subglobose or oblong, scarlet, flesh yellow, nutlets 4-5.

Shaly soil near Lansingburg. Flowers open about the middle of May, fruit ripens early in September and soon falls. In our plants the flowers open and the fruit ripens two or three weeks earlier than in the type and the number of stamens ranges from 12-19. In no case have I found a flower with 20 stamens. Nevertheless these variations do not seem to be of sufficient importance to warrant a separation of the plants. The unfolding leaves are tinged with brownish red.

Crataegus irrasa Sarg.*Unpolished thorn*

Rhodora, 5: 116

Shrub 6-12 feet tall with numerous slender spreading or ascending branches; leaves thin, ovate or oval, acute at the apex, cuneate at the base, lacinate serrate, when young clothed above with appressed whitish hairs, villose below on the midrib and principal veins, when mature firm, dark green and shining above, paler or yellowish green below, petioles 6-12 lines long, slender, slightly margined at the apex, sparingly glandular; flowers 6-7 lines broad, supported on villose peduncles, calyx tube densely villose, its lobes lanceolate, glandular serrate, villose, reflexed, appressed, stamens 20, anthers pale yellow; fruit subglobose or oblong, dark red, nutlets 4-5.

Clayey soil. North Greenbush. The plants which are here referred to this species diverge so much from a rigid agreement with the description of the species to which we have referred them that it seems best to consider them a variety which may be called *var. divergens*.

It is characterized as follows:

Leaves oval, serrate with blunt gland-tipped teeth, divided above the middle into 4-5 short narrow strongly pointed lobes each side, petioles villose; corymbs 5-10 flowered, stamens 10-18, anthers whitish; fruit globose or oval.

The young shoots are villose tomentose. The flowers open about the middle of May and the fruit ripens the last week in August or early in September, which is two or three weeks earlier than in the type. Only a single clump of this shrub was found. It approaches *C. densiflora* in its characters but differs from it in its more numerous stamens and in having the lower surface of the leaves hairy on the midrib and principal veins.

TENUIFOLIAE

Fruit medium, oblong, pyriform or subglobose, crimson or scarlet, nutlets 2-5; inflorescence glabrous or nearly so, stamens 5-20, anthers pink, rose color or dark red; leaves membranaceous, generally pubescent on the upper surface when young, glabrous or scabrous when mature.

The three species here recorded may be tabulated as follows:

Leaves ovate or oblong ovate	<i>C. ascendens</i>
Leaves ovate, oval or rhomboidal	1
1 Calyx lobes hairy on the inner surface	<i>C. matura</i>
1 Calyx lobes glabrous on the inner surface	<i>C. delucida</i>

Crataegus ascendens Sarg.

Ascending thorn

Rhodora, 5: 141

Shrub 6-10 feet tall with slender ascending branches bearing short, straight or slightly curved spines rarely more than an inch long; leaves thin, ovate or oblong ovate, at flowering time 1.5-2 inches long, 8-15 lines broad, acuminate at the apex, rounded or cuneate at the base, finely and sharply serrate, with 4-5 acuminate

lobes each side, often tinged with brownish red as they unfold and clothed above with minute appressed whitish hairs which soon disappear, dark yellowish green above, paler below, larger, darker green and glabrous when mature, petioles slender, 9-15 lines long, dotted with a few scattered glands and slightly margined at the apex; flowers 6-12 in a cluster, on slender rather long glabrous peduncles, calyx lobes narrow, elongated, entire or with a few minute glands, stamens 5-10, anthers pink or pinkish purple; fruit subglobose obovate or oblong, dark red when ripe, drooping, the calyx lobes subpersistent, spreading or reflexed, nutlets 3-4.

Clayey soil. North Greenbush and Rensselaer. Flowers May 12-20, fruit ripens during September. This species is very distinct and easily recognized by its peculiar oblong ovate leaves with acuminate apex and on fertile branches with cuneate base, making them pointed at each end. On young and vigorous shoots they are usually broadly rounded at the base, and are sometimes 3.5-4 inches long and 2-2.5 inches broad. They are generally more elongated when growing in the borders of woods than when in more open exposed places. The autumn buds are clothed with a varnish which is sticky in warm weather. Though found in several places on the east side of the Hudson river, no example of it has yet been found on the west side of the river.

***Crataegus matura* Sarg.**

Mature thorn

Rhodora, 3: 24

Shrub 5-10 feet tall with many slender ascending or nearly erect branches or occasionally with the lower widely spreading; leaves broadly ovate, oval or rhomboidal, thin, acute or acuminate at the apex, rounded or cuneate at the base, finely and sharply serrate, deeply and sharply divided into 4-6 very distinct sharp pointed or acuminate lobes on each side, yellowish green when young and clothed with short appressed whitish hairs, darker green and glabrous when mature, 2-2.5 inches long, 1.5-2 inches broad, petioles slender, 6-12 lines long, slightly glandular and sometimes wing margined at the apex; flowers 4-8 in a cluster, on short glabrous or slightly hairy peduncles, calyx lobes elongated, narrow, entire or slightly glandular, often red at the tips,

slightly hairy on the inner surface, becoming bright red at the base, stamens usually 10, sometimes 5-9, anthers red or reddish purple; fruit subglobose or oval, about 6 lines long, 5-6 broad, dark red or crimson, nutlets 2-5, flesh yellow, pleasant, edible.

Clayey soil and rocky pastures. Gansevoort, Saratoga co. and Lake Pleasant, Hamilton co. Flowers in May, ripens its fruit the latter part of August.

The early ripening of the fruit is one of the distinguishing characters of the species. In our specimens the fruit is scarcely oblong as in the typical form, and the styles are 2-3, but in other respects the agreement of the characters is good. The bright red color of the inner bases of the calyx lobes in the Gansevoort specimens contrasts beautifully with the pale green color of the immature fruit.

***Crataegus delucida* Sarg.**

Delucid thorn

Rhodora, 5: 139

Shrub 6-10 feet tall with erect or ascending branches; leaves thin, ovate, broadly ovate or oval, acute, sharp pointed or acuminate at the apex, broadly rounded, subtruncate or rarely broadly cuneate at the base, finely serrate, with 4-6 distinct, sharp pointed or acuminate lobes each side, generally tinged with bronze red when they unfold and then covered above with short appressed whitish hairs, at flowering time yellowish green, 1-1.5 inches long, 9-18 lines broad, paler and glabrous below, larger, darker green and glabrous above when mature, petioles slender, 6-12 lines long, usually shorter on young and vigorous shoots with the blades larger and broader, slightly glandular; flowers 6-12 in a cluster, about 6 lines broad, on slender branched glabrous peduncles, calyx lobes narrow, elongated, entire or with few minute glands, often red at the tips, stamens usually 5-8, sometimes 10, anthers red or reddish purple; fruit oblong, bright red or scarlet, drooping, the calyx lobes spreading or reflexed, often deciduous from the ripe fruit, nutlets 3-4, flesh yellow.

Clayey hillsides and rocky pastures. Albany and Sandlake. Flowers about the middle of May, fruit ripens during the last half of September or early in October.

This is one of the prevailing species on the hillsides north of Albany. The flowers have a strong potash odor. It is closely related to *C. acutiloba* Sarg. with which it was formerly united, but its flowers are smaller and its nutlets more numerous.

COCCINEAE

Fruit medium, subglobose, crimson or scarlet when ripe, nutlets 2-5, distinctly ridged on the back; leaves thin or subcoriaceous.

Anthers pale yellow or whitish *C. gravesii*

Anthers purple or red 1

1 Stamens 20 *C. brainerdi*

1 Stamens 10 *C. praecoqua*

1 Stamens less than 10 *C. egglesoni*

Crataegus gravesii Sarg.

Graves thorn

Rhodora, 5: 159

Shrub or small tree with widely spreading or ascending branches; leaves ovate, obovate, elliptic or subrotund, thin, acute or rounded at the apex, rounded or cuneate at the entire base, unequally serrate with rather broad blunt teeth, with 3-4 short, broad, acute or rather blunt lobes each side, at flowering time pale green, glabrous or with a few scattered hairs above, when mature firm, glabrous, dark green and shining above, paler below, 1-2 inches long and nearly or quite as broad, petioles slender, 4-12 lines long, slightly margined at the apex, sometimes slightly villose and glandular when young; flowers 5-12 in a cluster, on slender, short, glabrous or slightly hairy peduncles, calyx glabrous, its lobes narrow, elongated, minutely glandular, stamens 4-8, occasionally 10, anthers pale yellow or whitish; fruit globose or depressed globose, erect, pale red or orange red when ripe, crowned by the short erect or spreading calyx lobes, nutlets 2-3.

Clayey soil. Albany, North Greenbush and Westport. Flowers late in May or early in June, fruit ripens late in September. Closely related to *C. coccinea rotundifolia*, from which it may be separated by its thinner leaves, mostly fewer stamens, paler fruit and fewer nutlets. Our examples are shrubs more glabrous than the type. The young unfolding leaves are sometimes tinged with brownish red.

Crataegus praecoqua Sarg.*Early thorn*

Rhodora, 3: 27, 5: 167

Shrub 8-10 feet tall with spreading branches; leaves ovate, oval or rhomboidal, acute or blunt at the apex, broadly cuneate at the base or on young vigorous shoots sometimes rounded, serrate, slightly divided into numerous short, narrow, sharp pointed lobes on each side, at flowering time thin, pale green and clothed above with short appressed whitish hairs, paler below and villose along the midrib and principal veins, when mature thick, dark green, shining, glabrous or scabrous above, paler below, 1.5-2 inches long, nearly or quite as broad, petioles stout, 4-6 lines long, margined on the upper part; flowers on villose, often branching peduncles, calyx tube hairy, its lobes narrow, elongated, glandular serrate, stamens 10, anthers pink; fruit subglobose, erect or drooping, slightly hairy, dark red.

Clayey soil. Crown Point. Flowers the latter part of May, fruit ripens the last of August or early in September. The species was first published under the name *Crataegus praecox*, but this was afterward changed to *C. praecoqua*.

Crataegus egglestoni Sarg.*Eggleston's thorn*

Rhodora, 3: 30

Shrub 5-10 feet tall with slender spreading or ascending branches; leaves oval, elliptic or suborbicular, acute or sharp pointed at the apex, broadly rounded or cuneate at the base, serrate, divided into 4-5 short inconspicuous acute lobes on each side, at flowering time thin, yellow green and hairy above with short whitish appressed hairs, paler and glabrous below, when mature thick or subcoriaceous, dark green and scabrous above; 1.5-2 inches long and nearly or quite as broad, petioles slender, 6-12 lines long, slightly margined at the apex, sparingly glandular; flowers 6-8 lines broad, 5-10 in a cluster, on rather long, loosely villose often branched peduncles, calyx tube glabrous or slightly hairy, its lobes entire or minutely glandular serrate, hairy on the inner surface, stamens 5-8, usually 5, anthers red or rose color; fruit subglobose or oval, crimson when ripe, the mostly persistent calyx lobes reflexed, appressed, nutlets 2-3, 3 lines long.

Clayey and shaly soil. Crown Point and Lansingburg. Flowers May 20-30, fruit ripens in September. The shrubs in the station near Lansingburg have recently been cut down. The spines are slender, straight or nearly so and 1.5-2 inches long. This species was originally placed in the section *Anomalae*, but there seems to be no character by which it may be clearly separated from the section in which it is here placed.

***Crataegus brainerdi* Sarg.**

Brainerds thorn

Rhodora, 3:27

Shrub 6-10 feet tall with ascending or suberect branches; leaves at first thin, ovate or broadly ovate, acute or acuminate at the apex, rounded or broadly cuneate at the base, or on young and vigorous shoots often subtruncate or slightly cordate, sharply serrate, divided into 4-5 slight, acute or sharp pointed lobes each side, when young slightly hairy above with short appressed whitish hairs, glabrous below, when mature thicker and firmer, dark green above, paler below, 1.5-2 inches long, 1-1.5 broad, larger on young and vigorous shoots, petioles slender, 4-12 lines long, glabrous, with few or no glands; flowers in clusters of 6-12, 9-10 lines broad, very fragrant, supported on slender, glabrous, simple or branched peduncles, calyx lobes linear lanceolate, entire or slightly glandular, often tinged with red, stamens 20, anthers bright red, filaments elongated, often becoming red or pink, very persistent; fruit erect, subglobose or short oblong, 5-6 lines long, 4-5 broad, bright scarlet, flesh yellow, edible, nutlets 3-4.

Rocky or bushy pastures. Sandlake, Rensselaer co. Flowers May 15-25, fruit ripens the latter part of September. The long erect persistent reddish filaments afford an attractive and easily recognized character. They sometimes remain plump and fresh till the beginning of September. The blossoms have a decided potash odor and are very attractive to honey bees. The styles are generally 3 but occasionally 4. The species is rare with us, but well marked and beautiful both in flower and fruit.

TOMENTOSAE

Fruit small or medium, subglobose, oval or pyriform, orange red or scarlet, nutlets 2-5 with a cavity on each of the ventral faces; flowers usually many in a cluster; leaves thin or coriaceous, usually pubescent beneath.

Crataegus succulenta* LinkSucculent thorn*

Silva N. A. 13: 139, t. 181

Shrub or bushy tree 8-15 feet tall with widely spreading or ascending branches; leaves elliptic or subrhomboidal, acute or sharp pointed at the apex, cuneate at the entire base, serrate, with 4-6 short, acute lobes each side above the middle, at flowering time thin, slightly hairy above, pubescent beneath, when mature coriaceous, dark green and glabrous above, paler below, usually 2-2.5 inches long, 1.5-2 inches broad, on young and vigorous shoots somewhat larger and broadly or concavely cuneate or rounded at the base, petioles stout, 4-8 lines long, margined at the apex, often becoming red or reddish with age; flowers 7-8 lines broad, many in a cluster, supported on long, slender villose branching peduncles, calyx tube hairy or glabrous, its lobes laciniately glandular serrate, elongated, soon reflexed, hairy, stamens 15-20, anthers small, pink; fruit globose, scarlet, drooping, 4-6 lines long, flesh yellow, juicy, edible, nutlets 2-3, 3 lines long.

Clayey soil. Albany and Albia, Rensselaer co. Flowers from May 15-25, fruit ripens in September and usually hangs on the branches till late in October. Sometimes a few persist through the winter.

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SUPPLEMENTARY LIST OF PLANTS OF THE SUSQUEHANNA VALLEY

BY FRANK E. FENNO

***Dryopteris goldieana* (Hook.) Gray**

***Aspidium goldieanum* Hook.**

Goldie's shield fern

Hillsides near Nichols. Infrequent. August.

Panicum walteri Pursh**Panicum crus-galli** var. **hispidum** Torr.*Cockspur grass*

Common along the river. August–October.

Panicum minus (Muhl.) Nash*Wood panicum*

Dry woods and thickets near Nichols. Not common. August, September.

Eragrostis major Host*Pungent meadow grass*

Roadsides and along railways. Frequent. August, September.

Panicularia elongata (Torr.) Kuntze**Glyceria elongata** Trin.*Long manna grass*

In a swamp near Smithboro. Infrequent. August, September.

Eleocharis palustris (L.) R. & S.*Creeping spike rush*

Low wet grounds, specially along the river. Common. August, September.

Smilax rotundifolia L.*Green brier. Catbrier*

Thickets near Nichols. Rare. Stem more or less quadrangular and high climbing. Leaves five nerved. May, June.

Lemna trisulca L.*Ivy-leaved duckweed*

Ditches and sloughs. Frequent. July, August.

Corylus americana Walt.*Hazelnut*

Thickets along the river. Common. Apparently not found here on the uplands. March, April.

Corylus rostrata Ait.*Beaked hazelnut*

Fence rows and thickets. Common. April.

Betula populifolia Marsh.*White birch*

Plentiful along the valley road 3 miles south of Owego. May.

Betula lenta L.*Black birch*

Rich woodland. Common. April, May.

Betula lutea Mx.*Yellow birch*

Rich moist woodland. Common. April, May.

Alnus incana (L.) Willd.*Tag alder*

Borders of streams and swamps. Common. February–April.

Alnus rugosa (Du Roi) K. Koch*A. serrulata Willd.**Smooth alder*

Mutton hill pond. This is its only station. February–April.

Fagus americana Sweet**Fagus ferruginea Ait.***Beech*

Scattered throughout our territory. May.

Castanea dentata (Marsh.) Borkh.

Castanea sativa var. *americana* Wats.

Chestnut

A very common tree. July.

Syndesmon thalictroides (L.) Hoffmg.**Anemonella thalictroides Spach***Rue anemone*

Woods and thickets. Common. April–June.

Rubus occidentalis L.*Black raspberry*

Fence rows and neglected fields. Common. May, June.

Rhus copallina L.*Mountain sumac. Dwarf sumac. Upland sumac*

Dry soil 3 miles south of Owego. Rare. June, July.

Parsonsia petiolata (L.) Rusby**Cuphea viscosissima Jacq.***Blue waxweed. Tarweed*

Abundant in a neglected field near Nichols. August–October. Fine flowering specimens were collected as late as Oct. 24. The whole plant is very viscid pubescent.

Mitchella repens L.*Partridge berry. Twin berry*

Woods. Common. June.

Cephalanthus occidentalis L.*Button bush*

Swamps. Common. July, August.

Galium aparine L.*Cleavers*

Damp shaded ground. Common. Summer.

Galium pilosum Ait.*Hairy bedstraw*

Dry bushy places. Frequent. Summer.

Galium lanceolatum Torr.*Torrey's wild liquorice*

Dry woods. Common. Summer.

Galium circaeazans Mx.*Wild liquorice*

Dry woods. Common. May-July.

Galium boreale L.*Northern bedstraw*

Rocky soil, specially along streams. Common. June.

Galium asprellum Mx.*Rough bedstraw*

Swamps and low grounds. Common. Summer.

Galium triflorum Mx.*Sweet-scented bedstraw*

Damp woodland. Common. Summer.

EXPLANATION OF PLATES

PLATE O

Inocybe castanea Pk.

CHESTNUT INOCYBE

1, 2 Two immature plants

3, 4 Two mature plants

5 Vertical section of the upper part of an immature plant

6 Vertical section of the upper part of a mature plant

7 Transverse section of a stem

8 A cystidium, x 400

9 Four spores, x 400

***Inocybe squamosodisca* Pk.**

SCALY DISKED INOCYBE

10 Immature plant

11 Mature plant showing scaly disk

12 Vertical section of the upper part of a mature plant

13 Four spores, x 400

***Inocybe excoriata* Pk.**

EXCORIATED INOCYBE

14 Immature plant

15, 16 Mature plants showing the excoriated surface of the caps

17 Vertical section of the upper part of an immature plant

18 Vertical section of the upper part of a mature plant

19 Four spores, x 400

***Inocybe fallax* Pk.**

FALLACIOUS INOCYBE

20 Immature plant

21 Mature plant

22 Vertical section of the upper part of an immature plant

23 Transverse section of a stem

24 A cystidium, x 400

25 Four spores, x 400

***Tricholoma subluteum* Pk.**

TWO COLORED TRICHOLOMA

26 Immature plant

27 Mature plant

28 Vertical section of the upper part of a plant

29 Four spores, x 400

***Stereum burtianum* Pk.**

BURT'S STEREUM

30 Small plant

31 Plant with lacerated margin of the pileus

32 Plant with incomplete pileus

33 Three plants with confluent pilei

34 Four spores, x 400

PLATE 84

Collybia familia Pk.

FAMILY COLLYBIA

- 1 Cluster of small plants
- 2 Cluster of large plants with the center of the cap colored
- 3 Single large plant
- 4 Single large plant with the center of the cap colored
- 5 Vertical section of the upper part of a large plant
- 6 Transverse section of a stem
- 7 Four spores, x 400

Collybia acervata Fr.

TUFTED COLLYBIA

- 8 Cluster of eight plants, four with caps moist and more highly colored
- 9 Plant with pale tan colored cap
- 10 Plant with whitish cap
- 11 Vertical section of the upper part of a large plant
- 12 Transverse section of a stem
- 13 Four spores, x 400

Bovista pila B. & C.

ROUND BOVISTA

- 14 Immature plant
- 15 Mature plant ruptured at the apex
- 16 Vertical section of a young plant in edible condition
- 17 Part of a branching filament of the capillitium, x 400
- 18 Four spores, x 400

PLATE 85

Russula mariae Pk.

MARY'S RUSSULA

- 1, 2 Immature plants
- 3 Mature plant
- 4 Immature plant of darker color
- 5 Mature plant of darker color
- 6 Vertical section of the upper part of an immature plant
- 7 Vertical section of the upper part of a mature plant
- 8 Four spores, x 400

Russula furcata (Pers.) Fr.

FORKED RUSSULA

- 9 Immature plant
- 10 Mature plant with the cap partly expanded
- 11 Mature plant with the cap fully expanded
- 12 Vertical section of the upper part of an immature plant
- 13 Vertical section of the upper part of a mature plant
- 14 Four spores, x 400

PLATE 86

Psilocybe foenisecii (Pers.) Fr.

HAYMAKER'S PSILOCYBE

- 1-3 Immature plants with moist striatulate caps
- 4 Plant after the moisture has partly escaped from the cap
- 5-7 Mature plants with caps destitute of moisture
- 8, 9 Vertical sections of the upper part of two plants
- 10 Transverse section of a stem
- 11 Four spores, x 400

Pholiota vermiflua Pk.

WORMY PHOLIOTA

- 12 Young plant with gills hidden by the veil
- 13, 14 Immature plants showing the whitish gills
- 15 Mature plant with the cap fully expanded
- 16 Mature plant with the cap rimosely areolate
- 17 Vertical section of the upper part of an immature plant
- 18 Vertical section of the upper part of a mature plant
- 19 Transverse section of a stem
- 20 Four spores, x 400





FIG. 1-9 INOCYBE CASTANEA FR.
CHESTNUT INOCYBE

FIG. 14-19 INOCYBE ENCORIATA FR.
ENCORIATED INOCYBE

FIG. 26-29 TRICHOLOMA SUBLUTEUM FR.
TWO COLORED TRICHOLOMA

FIG. 10-13 INOCYBE SQUAMOSODISCA FR.
SCALY DISKED INOCYBE

FIG. 20-25 INOCYBE FALLAX FR.
FALLACIOUS INOCYBE

FIG. 30-34 STEREOUM BURTIANUM FR.
BURT'S STEREOUM



FIG. 1-9 INOCYBE CASTANEA PK.
CHESTNUT INOCYBE

FIG. 14-19 INOCYBE EXCORIATA PK.
EXCORIATED INOCYBE

FIG. 26-29 TRICHOLOMA SUBLUTEUM PK.
TWO COLORED TRICHOLOMA

FIG. 10-13 INOCYBE SQUAMOSODISCA PK.
SCALY DISKED INOCYBE

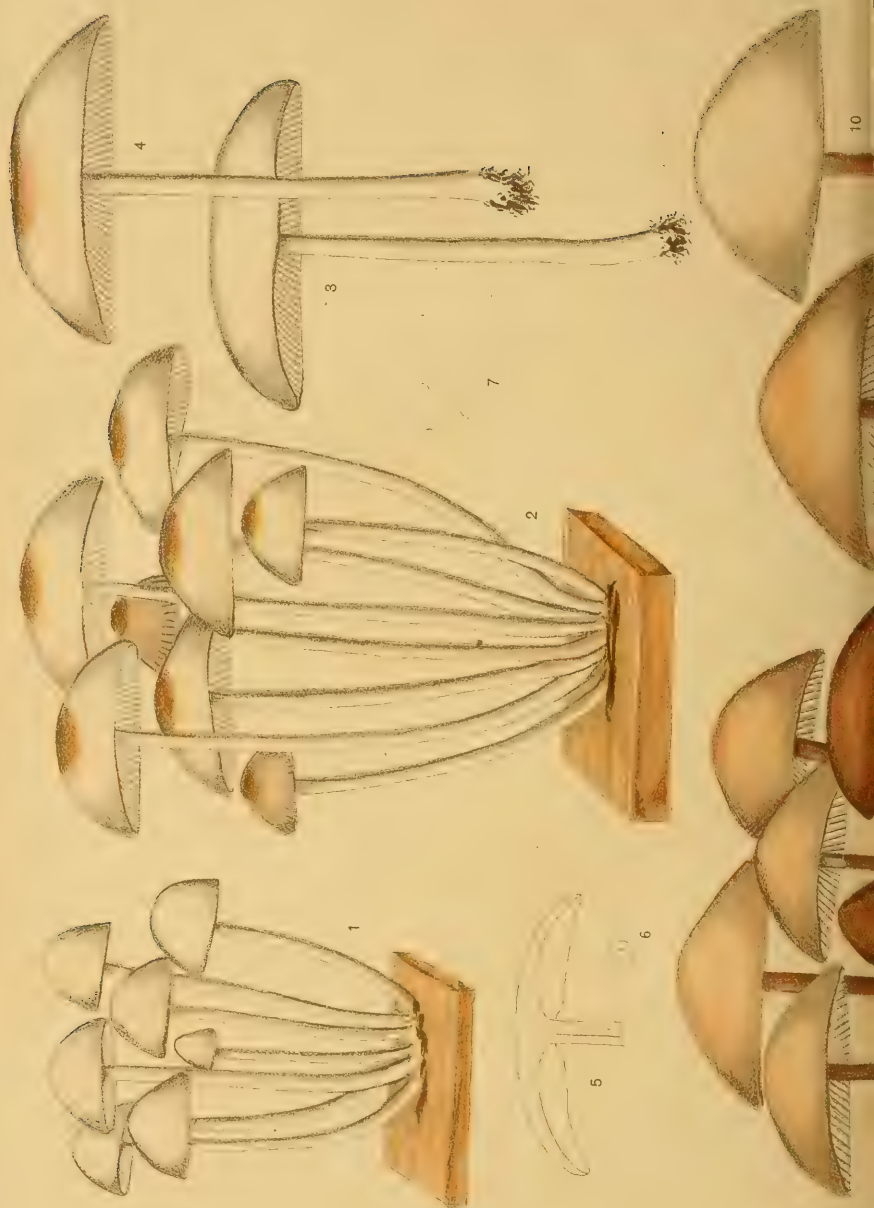
FIG. 20-25 INOCYBE FALLAX PK.
FALLACIOUS INOCYBE

FIG. 30-34 STEREUM BURTIANUM PK.
BURT'S STEREUM

EDIBLE FUNGI

N. Y. STATE MUS. 57

PLATE 84



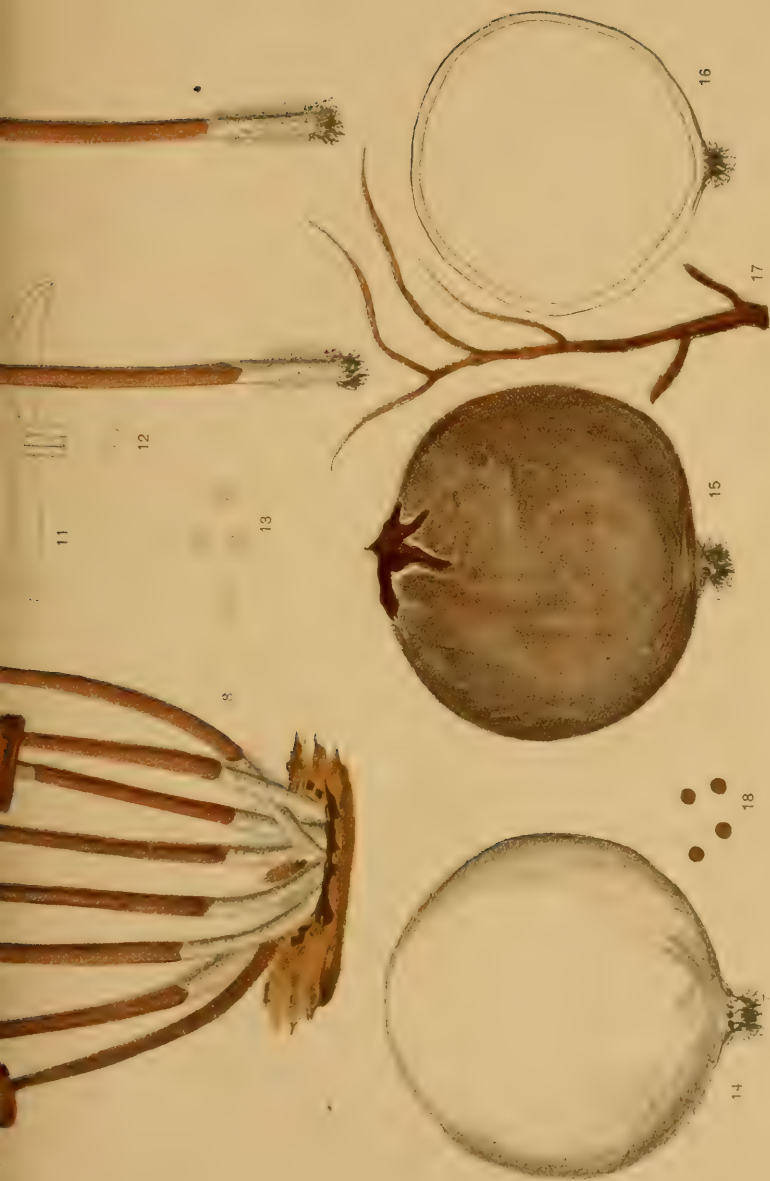


FIG. 1-7 COLLYBIA FAMILIA PK.
FAMILY COLLYBIA

FIG. 8-13 COLLYBIA ACERVATA FR.
TUFTED COLLYBIA

FIG. 14-18 BOVISTA PILA B & C.
ROUND BOVISTA

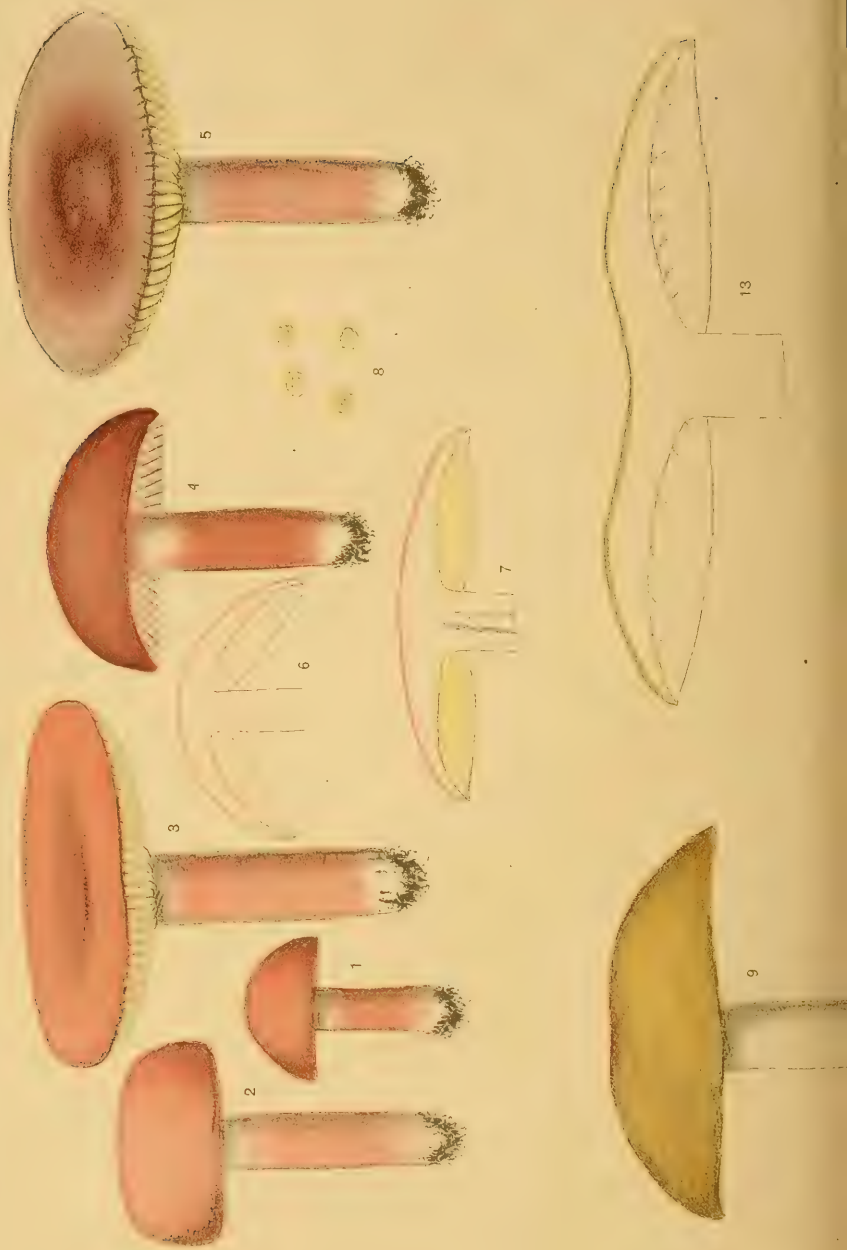


FIG. 1-7 COLLYBIA FAMILIA PK.
FAMILY COLLYBIA

FIG. 8-13 COLLYBIA ACERVATA FR.
TUFTED COLLYBIA

FIG. 14-18 BOVISTA PILA B & C.
ROUND BOVISTA

EDIBLE FUNGI



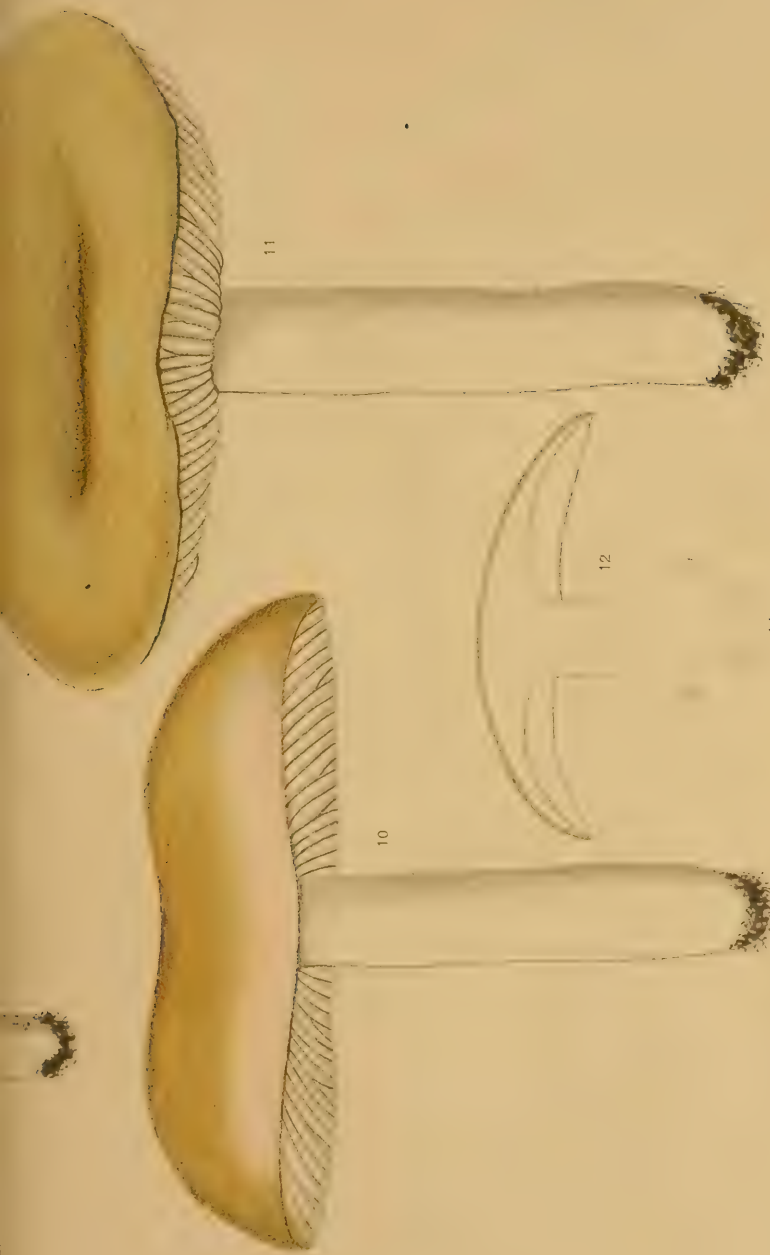


FIG. 9-14 RUSSULA FURCATA (PERS.) FR.
FORKED RUSSULA

FIG. 1-8 RUSSULA MARIAE FR.
MARY'S RUSSULA

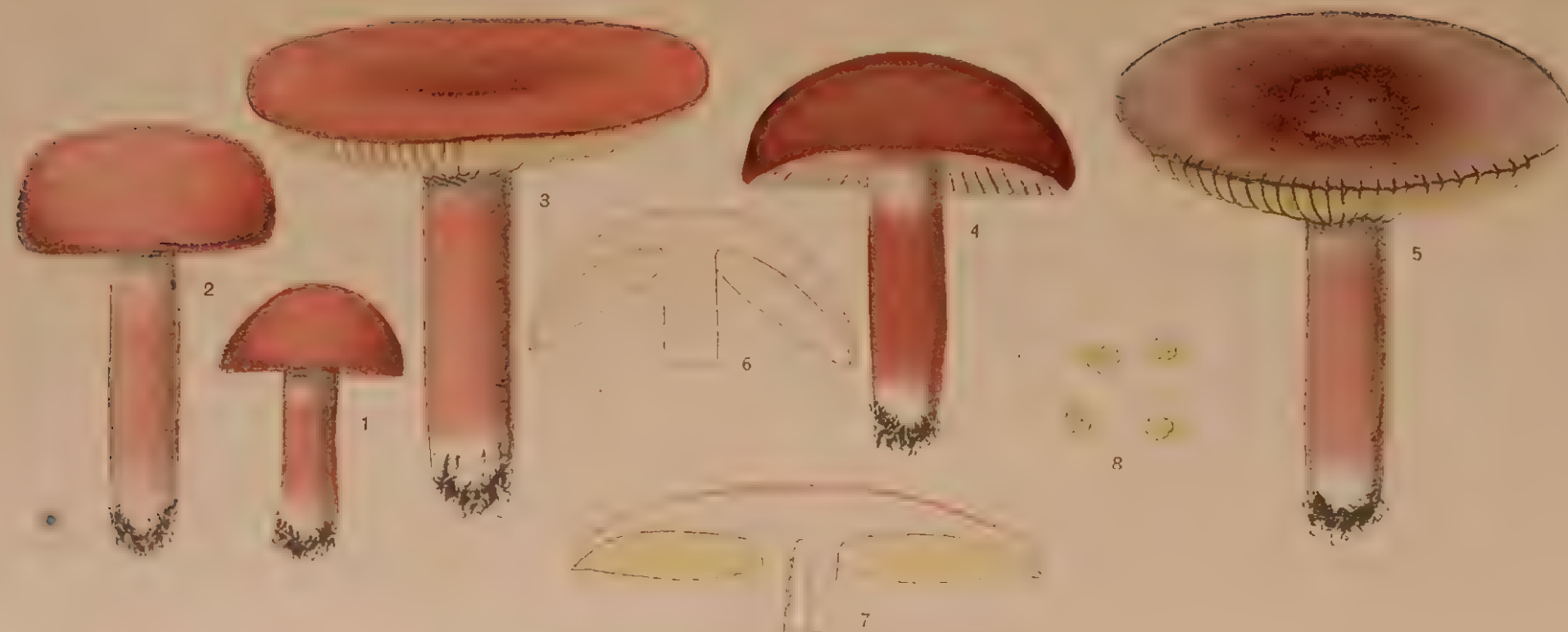


FIG. 1-8 *RUSSULA MARIAE* PK.
MARY'S RUSSULA

FIG. 9-14 *RUSSULA FURCATA* (PERS.) FR.
FORKED RUSSULA



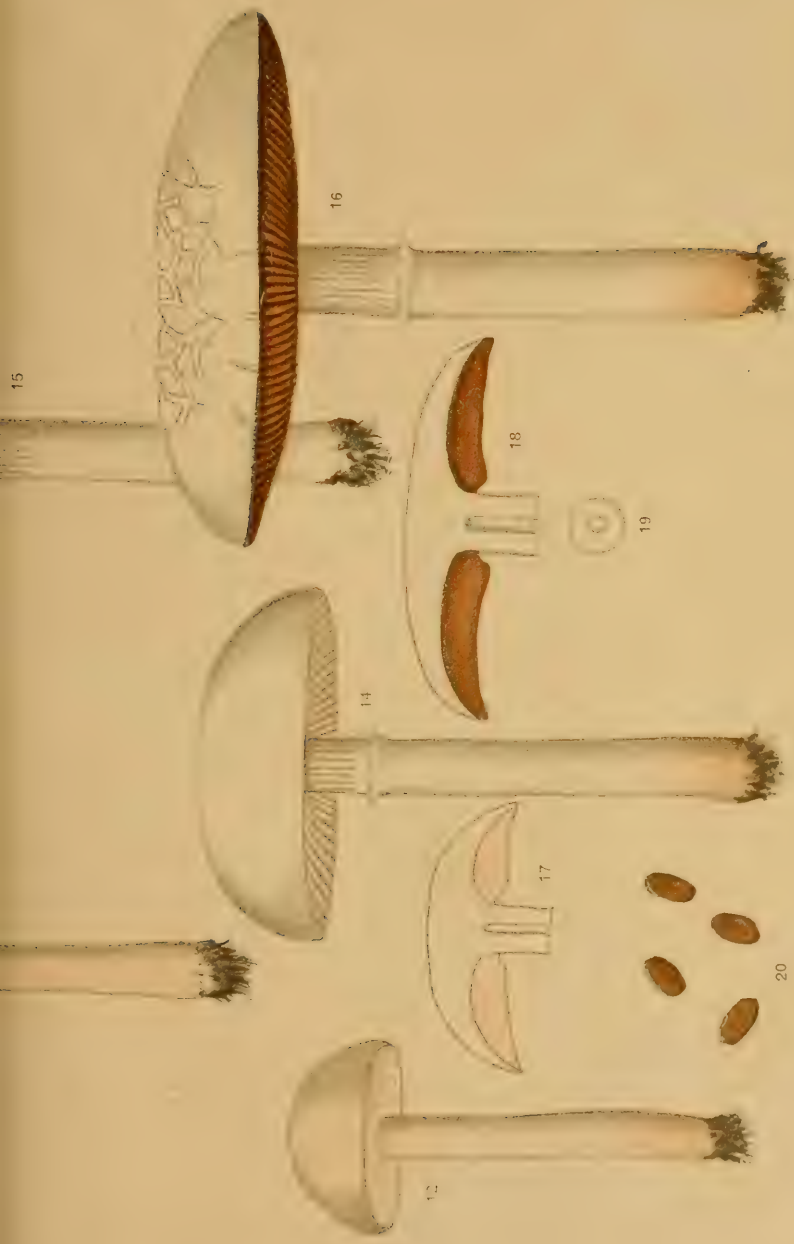


FIG. 1-11 *PSILOCYBE FOENISECII* (PRES.) FR.
HAY MAKER'S *PSILOCYBE*

FIG. 12-20 *PHOLIOTA VERMIFLUA* PK.
WORMY *PHOLIOTA*



FIG. 1-11 *PSILOCYBE FOENISECHII* (PERS.) FR.
HAY MAKER'S PSILOCYBE

FIG. 12-20 *PHOLIOTA VERMIFLUA* PK.
WORMY PHOLIOTA

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Museum annual reports 1847-date. *All in print to 1892, 50c a volume, 75c in cloth; 1892-date, 75c, cloth.*

These reports are made up of the reports of the director, geologist, paleontologist, botanist and entomologist, and museum bulletins and memoirs, issued as advance sections of the reports.

Geologist's annual reports 1881-date. Rep'ts 1, 3-13, 17-date, O; 2, 14-16, Q.

The annual reports of the early natural history survey, 1837-41 are out of print.

Reports 1-4, 1881-84 were published only in separate form. Of the 5th report 4 pages were reprinted in the 30th museum report, and a supplement to the 6th report was included in the 40th museum report. The 7th and subsequent reports are included in the 41st and following museum reports, except that certain lithographic plates in the 11th report (1891) and 13th (1893) are omitted from the 45th and 47th museum reports.

Separate volumes of the following only are available.

Report	Price	Report	Price	Report	Price
12 (1892)	\$.50	16	\$.1	19	\$.40
14	.75	17	.75	20	.50
15, 2v.	2	18	.75	21	.40
				22	.40

In 1898 the paleontologic work of the State was made distinct from the geologic and will hereafter be reported separately.

Paleontologist's annual reports 1899-date.

See fourth note under Geologist's annual reports.

Bound also with museum reports of which they form a part. Reports for 1899 and 1900 may be had for 20c each. Since 1901 these reports have been issued as bulletins.

Entomologist's annual reports on the injurious and other insects of the State of New York 1882-date.

Reports 3-17 bound also with museum reports 40-46, 48-55 of which they form a part. Since 1898 these reports have been issued as bulletins. Reports 3-4 are out of print, other reports with prices are:

Report	Price	Report	Price	Report	Price
1	\$.50	9	\$.25	14 (Ent. 5)	\$.20
2	.30	10	.35	15 (" 9)	.15
5	.25	11	.25	16 (" 10)	.25
6	.15	12	.25	17 (" 14)	.30
7	.20	13	.10	18 (" 17)	.20
8	.25			19	<i>In press</i>

Reports 2, 8-12 may also be obtained bound separately in cloth at 25c in addition to the price given above.

Botanist's annual reports 1867-date.

Bound also with museum reports 21-date of which they form a part; the first botanist's report appeared in the 21st museum report and is numbered 21. Reports 21-24, 29, 31-41 were not published separately.

Separate reports 25-28, 30, 42-50 and 52 (Botany bulletin 3) are out of print. Report 51 may be had for 40c; 53 for 20c; 54 for 50c. Since the 55th these reports have been issued as bulletins.

Descriptions and illustrations of edible, poisonous and unwholesome fungi of New York have been published in volumes 1 and 3 of the 48th museum report and in volume 1 of the 49th, 51st, 52d, 54th and 55th reports. The descriptions and illustrations of edible and unwholesome species contained in the 49th, 51st and 52d reports have been revised and rearranged, and, combined with others more recently prepared constitute Museum memoir 4.

Museum bulletins 1887-date. O. *To advance subscribers, \$2 a year or 50c a year for those of any one division: (1) geology, economic geology, mineralogy, general zoology, archeology and miscellaneous, (2) paleontology, (3) botany, (4) entomology.*

Bulletins are also found with the annual reports of the museum as follows:

Bulletin	Report	Bulletin	Report	Bulletin	Report
12-15	48, V. 1	20-25	52, V. 1	35-36	54, V. 2
16-17	50 "	26-31	53 "	37-44	" V. 3
18-19	51 "	32-34	54 "	45-48	" V. 4
				49-54	55, V. 1

The figures in parenthesis indicate the bulletin's number as a New York State Museum bulletin.

Geology. G1 (14) Kemp, J. F. *Geology of Moriah and Westport Townships, Essex Co. N. Y., with notes on the iron mines.* 38p. 7pl. 2 maps. Sep. 1895. 10c.

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- G2 (19)** Merrill, F: J. H. Guide to the Study of the Geological Collections of the New York State Museum. 162p. 119pl. map. Nov. 1898. [50c] *New edition in preparation.*
- G3 (21)** Kemp, J. F. Geology of the Lake Placid Region. 24p. 1pl. map. Sep. 1898. 5c.
- G4 (48)** Woodworth, J. B. Pleistocene Geology of Nassau County and Borough of Queens. 58p. il. 9pl. map. Dec. 1901. 25c.
- G5 (56)** Merrill, F: J. H. Description of the State Geologic Map of 1901. 42p. 2 maps, tab. Oct. 1902. 10c.
- G6** Cushing, H. P. Geology of the Vicinity of Little Falls, Herkimer Co. *In press.*
 ——— Crystalline Rocks of the Northeastern Adirondacks. *In press.*
- Kemp, J. F. Crystalline Rocks of Warren and Washington Counties. *In preparation.*
- Woodworth, J. B. Glacial Geology of New York. *In preparation.*
- Economic geology.** **Eg1 (3)** Smock, J: C. Building Stone in the State of New York. 152p. Mar. 1888. *Out of print.*
- Eg2 (7)** ——— First Report on the Iron Mines and Iron Ore Districts in the State of New York. 6+70p. map. June 1889. *Out of print.*
- Eg3 (10)** ——— Building Stone in New York. 210p. map, tab. Sep. 1890. 40c.
- Eg4 (11)** Merrill, F: J. H. Salt and Gypsum Industries of New York. 92p. 12pl. 2 maps, 11 tab. Ap. 1893. 40c.
- Eg5 (12)** Ries, Heinrich. Clay Industries of New York. 174p. 2pl. map. Mar. 1895. 30c.
- Eg6 (15)** Merrill, F: J. H. Mineral Resources of New York. 224p. 2 maps. Sep. 1895. 50c.
- Eg7 (17)** ——— Road Materials and Road Building in New York. 52p. 14pl. 2 maps 34x45, 68x92 cm. Oct. 1897. 15c.
 Maps separate 10c each, two for 15c.
- Eg8 (30)** Orton, Edward. Petroleum and Natural Gas in New York. 136p. il. 3 maps. Nov. 1899. 15c.
- Eg9 (35)** Ries, Heinrich. Clays of New York; their Properties and Uses. 456p. 140pl. map. June 1900. \$1, cloth.
- Eg10 (44)** ——— Lime and Cement Industries of New York; Eckel, E. C. Chapters on the Cement Industry. 332p. 101pl. 2 maps. Dec. 1901. 85c, cloth.
- Eg11 (61)** Dickinson, H. T. Quarries of Bluestone and other Sandstones in New York. 108p. 18pl. 2 maps. Mar. 1903. 35c.
- Mineralogy.** **M1 (4)** Nason, F. L. Some New York Minerals and their Localities. 20p. 1pl. Aug. 1888. [10c]
- M2 (58)** Whitlock, H. P. Guide to the Mineralogic Collections of the New York State Museum. 150p. il. 39pl. 11 models. Sep. 1902. 40c.
- M3 (70)** ——— New York Mineral Localities. 110p. Sep. 1903. 20c.
- Paleontology.** **Pa1 (34)** Cumings, E. R. Lower Silurian System of Eastern Montgomery County; Prosser, C: S. Notes on the Stratigraphy of Mohawk Valley and Saratoga County, N. Y. 74p. 10pl. map. May 1900. 15c.
- Pa2 (39)** Clarke, J: M.; Simpson, G: B. & Loomis, F: B. Paleontologic Papers I. 72p. il. 16pl. Oct. 1900. 15c.
Contents: Clarke, J: M. A Remarkable Occurrence of Orthoceras in the Oneonta Beds of the Chenango Valley, N. Y.
 — Paropsonema cryptophya; a Peculiar Echinoderm from the Intumescens-zone (Portage Beds) of Western New York.
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